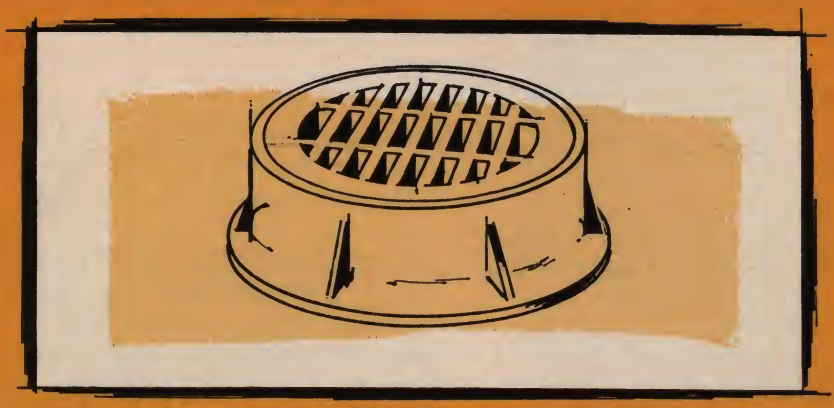
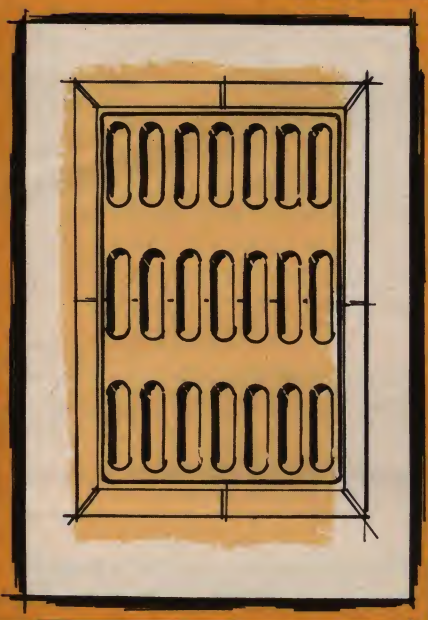
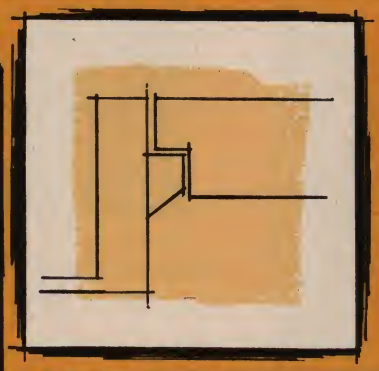
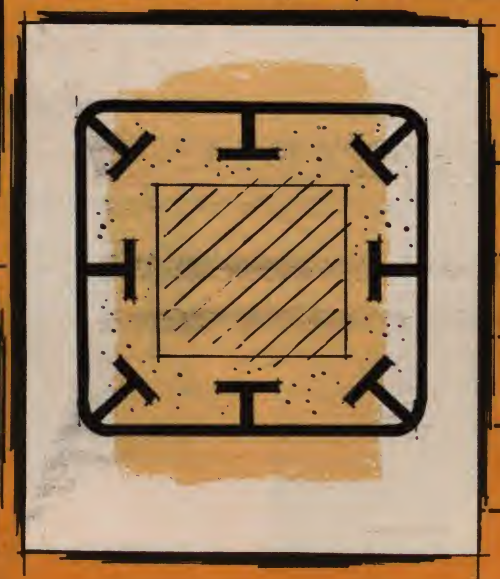
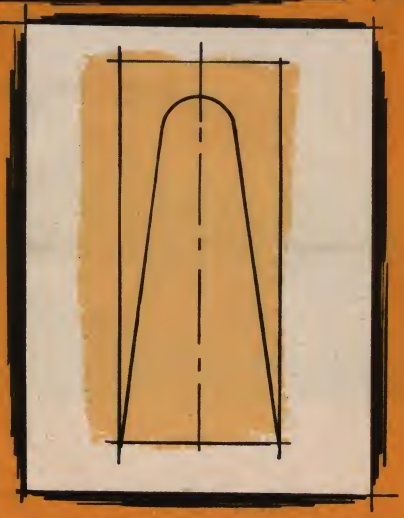






FLOCKHART





manhole frames	1
inlet frames	2
catch basin frames	3
troughs	4
trench frames	5
airport castings	6
armored concrete	7
wheel guards	8
leader shoes	9
related products	10

FLOCKHART FOUNDRY COMPANY
NEWARK, NEW JERSEY

all the recent advancements in design, metallurgy and manufacture

FLOCKHART castings—manhole frames, covers and gratings . . . inlet and catch basin frames . . . troughs and trench frames . . . armored concrete guards—all these products are backed by over 80 years of experience concentrated entirely on construction castings. *Yet, they incoporate all the recent advancements in design . . . in metallurgy . . . in manufacture.* In fact, FLOCKHART castings are especially designed, specifically formulated to meet the stringent requirements of federal, state and municipal agencies, housing developments, large manufacturing plants, institutions—wherever strong, durable, corrosion-resisting castings . . . *quality* castings with a meaningful guarantee . . . are required.

finest quality grey iron

FLOCKHART castings shown in this catalog, unless otherwise specified, are made of the finest quality grey cast iron: ASTM specification A-48 (latest revision), class 30; this formulation produces a minimum ultimate strength of 30,000 psi and is highly resistant to corrosion and abrasion. These castings are also available, on order, in other metals—ductile iron, cast steel, bronze, aluminum (see back cover).

how to order

FLOCKHART castings are easy to order. Within each major "family" of castings—manhole frames, for example—each group is assigned a *type* number (such as type 600). Then, within each group, each flange—is given its own individual *code* number (such as 62000). Consequently, in ordering practically all FLOCKHART castings in this catalog, it is necessary to give only two numbers: the *type* number of the group, and the *code* number of the desired combination of variables.

FLOCKHART *castings are furnished* non-*painted. Experience shows that painting only conceals any imperfections in the casting.*

FLOCKHART Foundry Company
Newark, New Jersey

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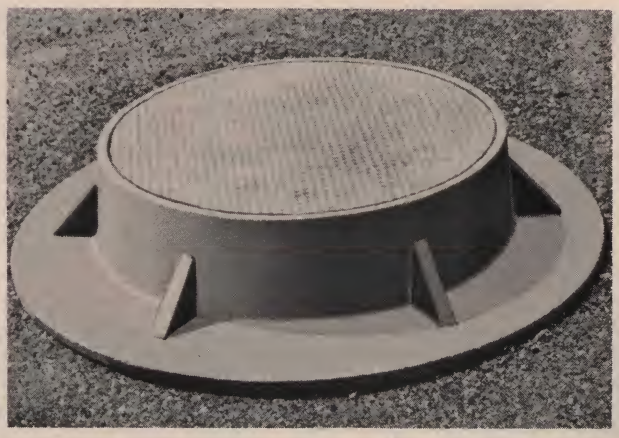
1 manhole frames

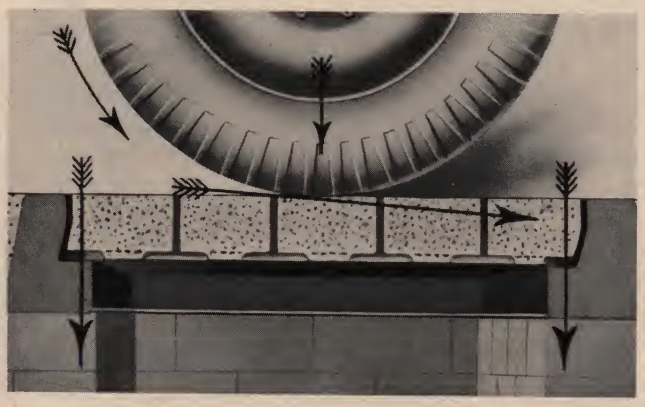
with cover or grating

Flockhart manhole frames, with their covers or gratings, are well-known for their inherent strength, their guaranteed dependability, their stout resistance to corrosion, time, traffic—and for their wide adaptability. The reason Flockhart manhole frames can be used on so many diversified types of applications is the variety of constructions, forms and sizes in which they are available. Not only are these *quality* castings made in the usual standard and surface-water-tight styles—but they are regularly furnished in complete "families" designed to perform specific functions: to be *tight* against hydrostatic or gas pressure . . . to be *proof* against rocking, tampering, even vermin . . . .

Consequently, in this catalog, Flockhart manhole frames are divided *by function*—as indicated in the selector guide at far right. Further, to facilitate comparison of the various constructions, the basic structure of each group is shown in a simplified diagram.

Many variations of these manhole frames, covers and gratings are available—as listed and numbered at right. In turn, the variations possible with each style of frame are indicated by related number.





	section
watertight	1a
watertight • inner cover	1b
hydrostatic and gas pressure tight	1c
standard	1d
valve box type	1e
non-rocking	1f
hinged cover	1g
manhole steps	1h

variations from standard

1 depth and flange dimensions
2 covers for concrete fill
3 horizontal, vertical milling
4 horizontal milling
5 flush lift rings
6 drop lift handles
7 lock operated externally
8 lock operated internally
9 cast aluminum cover or grating
10 steel plate cover
11 grating cover
12 aluminum plate
13 concentric covers
14 square flange
15 lettering on cover
16 cast bronze
17 asbestos gasket
18 cast steel cover
19 ductile iron cover or grating

guarantee

Any casting designated ROADWAY which may break in roadway service within a period of ten years from date of invoice will be replaced gratis, fob nearest railroad station.

special manhole frames

spark-proof frames and covers

frost-proof covers, water-shedding covers, hinged and watertight covers, covers for concrete fill (for manholes and trenches)

bee-hive grating for catch basins, gratings for bell end of pipes

1a watertight

surface water only • single cover

● circular: type 600 • ROADWAY, WALKWAY

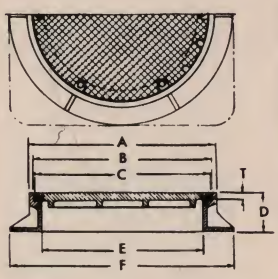
¼-in. flat rubber gasket between milled bearing surfaces; silicon bronze cap screws

variations: 1, 2, 5, 9, 15, 16, 17, 18, 19 (page 3)

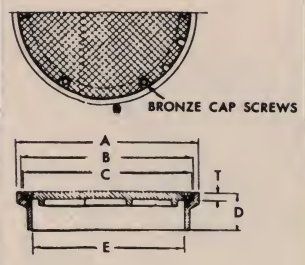
guarantee: ROADWAY types for 10 years

ordering: specify both type number (600–) and code number (from table)

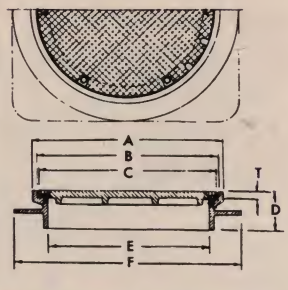
for pit type 600-C



for slab type 600-CD



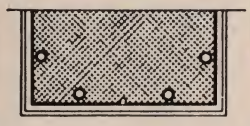
for waterproof slab type 600-CE



E	A	B	D•	F	C	T	for pit type 600-C: circular flange roadway	circular flange walkway	square flange roadway	square flange walkway	for slab type 600-CD: roadway	walkway	for waterproof slab type 600-CE: circular flange roadway	circular flange walkway	square flange roadway	square flange walkway
6	12	10	8	20	9⅞	1¼	62000	62001	62002	62003	62004	62005	62006	62007	62008	62009
12	18	16	8	26	15⅞	1¼	62010	62011	62012	62013	62014	62015	62016	62017	62018	62019
18	24	22	8	32	21⅞	1¼	62020	62021	62022	62023	62024	62025	62026	62027	62028	62029
24	30	28	8	38	27⅞	1¼	62030	62031	62032	62033	62034	62035	62036	62037	62038	62039
27	33	31	8	41	30⅞	1¼	62040	62041	62042	62043	62044	62045	62046	62047	62048	62049
30	36	34	8	44	33⅞	1½	62050	62051	62052	62053	62054	62055	62056	62057	62058	62059
33	39	37	8	47	36⅞	1½	62060	62061	62062	62063	62064	62065	62066	62067	62068	62069
36	42	40	8	50	39⅞	1½	62070	62071	62072	62073	62074	62075	62076	62077	62078	62079
40	46	44	8	54	43⅞	1½	62080	62081	62082	62083	62084	62085	62086	62087	62088	62089
42	48	46	8	56	45⅞	1½	62090	62091	62092	62093	62094	62095	62096	62097	62098	62099
48	54	52	8	62	51⅞	1½	62100	62101	62102	62103	62104	62105	62106	62107	62108	62109
54	60	58	8	68	57⅞	3	62110	62111	62112	62113	62114	62115	62116	62117	62118	62119
60	66	64	8	74	63⅞	3	62120	62121	62122	62123	62124	62125	62126	62127	62128	62129

• May be varied as desired

■ square: type 640 • ROADWAY, WALKWAY



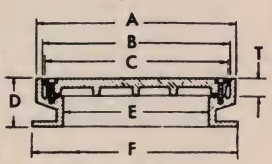
¾-in. diameter rubber gasket; silicon bronze cap screw

variations: 1, 2, 3, 4, 5, 7, 9, 15, 16, 18, 19 (page 3)

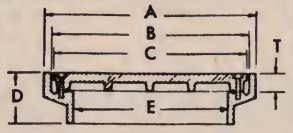
guarantee: ROADWAY types for 10 years

ordering: specify both type number (640–) and code number (from table)

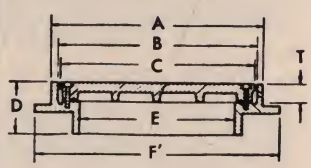
for pit type 640-C



for slab type 640-CD



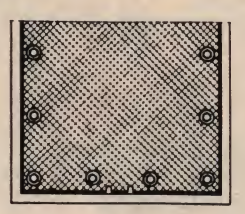
for waterproof slab type 640-SR



E	A	B	C	F	F■	D•	T	for pit type 640-C: roadway	walkway	for slab type 640-CD: roadway	walkway	for waterproof slab type 640-SR: roadway	walkway
6	15	13	12¾	20	16	8	3	24900	24901	24902	24903	24904	24905
12	21	19	18¾	26	22	8	3	24906	24907	24908	24909	24910	24911
18	27	25	24¾	32	28	8	3	24912	24913	24914	24915	24916	24917
20	29	27	26¾	34	30	8	3	24918	24919	24920	24921	24922	24923
24	33	31	30¾	38	34	8	3	24924	24925	24926	24927	24928	24929
27	36	34	33¾	41	37	8	3	24930	24931	24932	24933	24934	24935
30	39	37	36¾	44	40	8	3	24936	24937	24938	24939	24940	24941
33	42	40	39¾	47	43	8	3	24942	24943	24944	24945	24946	24947
36	45	43	42¾	50	46	8	3	24948	24949	24950	24951	24952	24953
42	51	49	48¾	56	52	8	3	24954	24955	24956	24957	24958	24959
48	57	55	54¾	62	58	8	3	24960	24961	24962	24963	24964	24965
54	63	61	60¾	68	64	8	3	24966	24967	24968	24969	24970	24971
60	69	67	66¾	74	70	8	3	24972	24973	24974	24975	24976	24977

• May be varied as desired
■ Refers to type 640-SR only

rectangular: type 656 • ROADWAY, WALKWAY



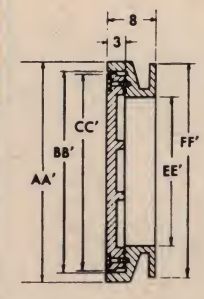
¾-in. diameter rubber gasket; silicon bronze cap screws

variations: 1, 3, 4, 5, 9, 15, 16, 18, 19 (page 3)

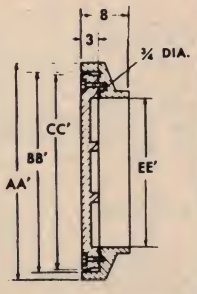
guarantee: ROADWAY types for 10 years

ordering: specify both type number (656–) and code number (from table)

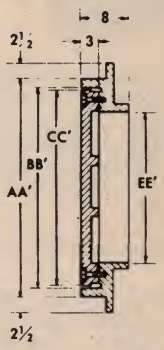
for pit type 656-C



for slab type 656-CD

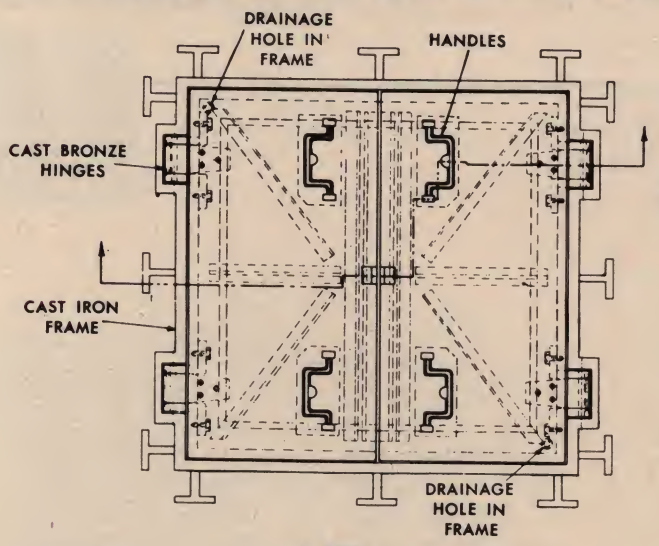


for waterproof slab type 656-SR



E	E'	A	A'	B	B'	C	C'	F	F'	for pit type 656-C roadway	for pit type 656-C walkway	for slab type 656-CD roadway	for slab type 656-CD walkway	for waterproof slab type 656-SR roadway	for waterproof slab type 656-SR walkway
6	12	15	21	13	19	12¾	18¾	16	22	22600	22601	22602	22603	22604	22605
12	24	21	33	19	31	18¾	30¾	22	34	22606	22607	22608	22609	22610	22611
18	36	27	45	25	43	24¾	42¾	28	46	22612	22613	22614	22615	22616	22617
20	40	29	49	27	47	26¾	46¾	30	50	22618	22619	22620	22621	22622	22623
24	48	33	57	31	55	30¾	54¾	34	58	22624	22625	22626	22627	22628	22629
27	54	36	63	34	61	33¾	60¾	37	64	22630	22631	22632	22633	22634	22635
30	60	39	69	37	67	36¾	66¾	40	70	22636	22637	22638	22639	22640	22641
33	66	42	75	40	73	39¾	72¾	43	76	22642	22643	22644	22645	22646	22647
36	72	45	81	43	79	42¾	78¾	46	82	22648	22649	22650	22651	22652	22653
40	80	49	89	47	87	46¾	86¾	50	90	22654	22655	22656	22657	22658	22659
42	84	51	93	49	91	48¾	90¾	52	94	22660	22661	22662	22663	22664	22665
48	96	57	105	55	103	54¾	102¾	58	106	22666	22667	22668	22669	22670	22671
54	108	63	117	61	115	60¾	114¾	64	118	22672	22673	22674	22675	22676	22677
60	120	69	129	67	127	66¾	126¾	70	130	22678	22679	22680	22681	22682	22683

with hinged doors • type 670 • WALKWAY



variations: provision for internal lock; special sizes as required; ROADWAY installation data on request

ordering: specify both type number (670) and code number (from table); state number of door panels required and sides on which hinges are located; state variations, if any, required

opening, in.		plate cover steel	plate cover aluminum	opening, in.		plate cover steel	plate cover aluminum
24	24	33650	16500	54	54	33665	16515
	36	33651	16501		81	33666	16516
	48	33652	16502		108	33667	16517
30	30	33653	16503	60	60	33668	16518
	45	33654	16504		90	33669	16519
	60	33655	16505		120	33670	16520
36	36	33656	16506	66	66	33671	16521
	54	33657	16507		99	33672	16522
	72	33658	16508		132	33673	16523
42	42	33659	16509	72	72	33674	16524
	63	33660	16510		108	33675	16525
	84	33661	16511		144	33676	16526
48	48	33662	16512				
	72	33663	16513				
	96	33664	16514				

b watertight • *inner cover sealed and locked* ROADWAY, WALKWAY

● circular: type 601

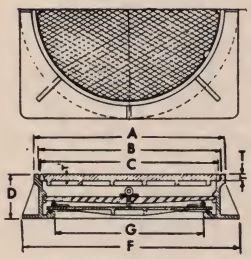
¾-in. diameter rubber gasket; silicon bronze cap screw; steel locking bar

variations: when specified, both covers may be made in two concentric parts; 1, 3, 4, 5, 6, 9, 13, 14, 15, 16, 18, 19 (page 3)

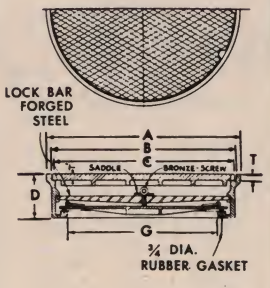
guarantee: ROADWAY types for 10 years

ordering: specify both type number (601–) and code number (from table)

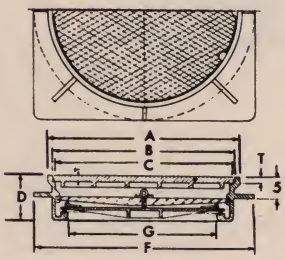
for pit type 601-A



for slab type 601-RA

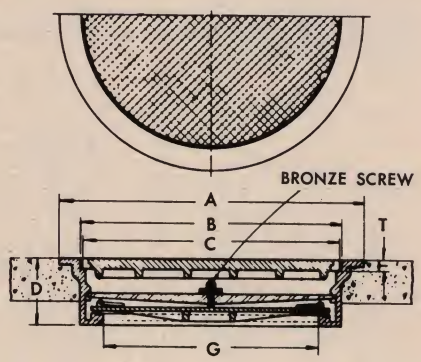


for waterproof slab type 601-SA



frame					cover		for pit type 601-A: circular flange		for pit type 601-A: square flange		for slab type 601-RA		for waterproof slab type 601-SA: circular flange		for waterproof slab type 601-SA: square flange	
G	A	B	D	F	C	T	roadway	walkway	roadway	walkway	roadway	walkway	roadway	walkway	roadway	walkway
6	16¼	13¼	10	23	13	1¼	62300	62301	62302	62303	62304	62305	62306	62307	62308	62309
12	22¼	19¼	10	29	19	1¼	62310	62311	62312	62313	62314	62315	62316	62317	62318	62319
20	30¼	27¼	10	37	27	1¼	62320	62321	62322	62323	62324	62325	62326	62327	62328	62329
24	34¾	31¾	10	40½	31½	1¼	62330	62331	62332	62333	62334	62335	62336	62337	62338	62339
27	36½	33½	11	43½	33¼	1½	62340	62341	62342	62343	62344	62345	62346	62347	62348	62349
30	39½	36½	11	46½	36¼	1½	62350	62351	62352	62353	62354	62355	62356	62357	62358	62359
31	41¼	38¼	11	47	38	1½	62360	62361	62362	62363	62364	62365	62366	62367	62368	62369
36	47	44	10	52½	43⅝	1½	62370	62371	62372	62373	62374	62375	62376	62377	62378	62379
40	51	48	10	55½	47⅝	1½	62380	62381	62382	62383	62384	62385	62386	62387	62388	62389
42	53	50	10	57½	49⅝	1½	62390	62391	62392	62393	62394	62395	62396	62397	62398	62399
48	58	55	10	63	54⅝	1½	62400	62401	62402	62403	62404	62405	62406	62407	62408	62409
54	64⅝	61⅝	10	68	61	3	62410	62411	62412	62413	62414	62415	62416	62417	62418	62419
60	70⅝	67⅝	10	74	67	3	62420	62421	62422	62423	62424	62425	62426	62427	62428	62429

● Circular: type 477 for shallow slab construction



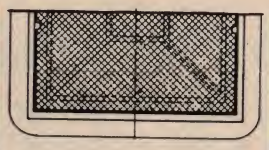
¾-in. diameter rubber gasket; silicon bronze cap screw; steel locking bar

guarantee: ROADWAY types for 10 years

ordering: specify both type number (477) and code number (from table)

frame				cover			
G	A	B	D	C	T	roadway	walkway
6	21¼	13¼	10	13	1¼	23240	23241
12	27¼	19¼	10	19	1¼	23242	23243
20	35¼	27¼	10	27	1¼	23244	23245
24	39¾	31¾	10	31½	1¼	23246	23247
27	41½	33½	11	33¼	1½	23248	23249
30	44½	36½	11	36¼	1½	23250	23251
31	46¼	38¼	11	38	1½	23252	23253
36	52	44	10	43⅝	1½	23254	23255
40	56	48	10	47⅝	1½	23256	23257
42	58	50	10	49⅝	1½	23258	23259
48	63	55	10	54⅝	1½	23260	23261
54	69⅝	61⅝	10	61	3	23262	23263
60	75⅝	67⅝	10	67	3	23264	23265

square: type 602



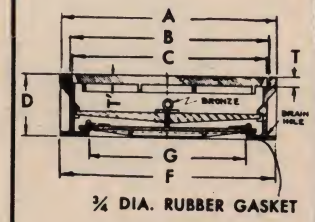
¾-in. diameter rubber gasket; silicon bronze cap screw; steel locking bar

variations: when specified, outside cover may be made in two equal and identical parts; 1, 3, 4, 5, 6, 9, 13, 15, 16, 18, 19 (page 3)

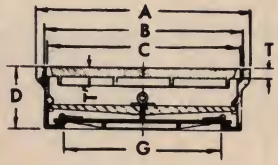
guarantee: ROADWAY types for 10 years

ordering: specify both type number (602–) and code number (from table)

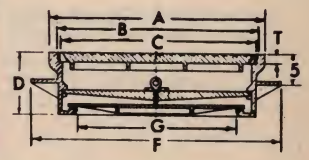
for pit type 602-A



for slab type 602-RA



for waterproof slab type 602-SA



G	A	B	D	F	C	T	for pit roadway	for pit walkway	for slab roadway	for slab walkway	for waterproof slab roadway	for waterproof slab walkway
6	17	14	10	22½	13¾	1½	62500	62501	62502	62503	62504	62505
12	23	20	10	28½	19¾	1½	62506	62507	62508	62509	62510	62511
18	29	26	10	34½	25¾	1½	62512	62513	62514	62515	62516	62517
20	31	28	10	36½	27¾	1½	62518	62519	62520	62521	62522	62523
24	35	32	10	40½	31¾	1½	62524	62525	62526	62527	62528	62529
27	38	35	10	43½	34¾	1½	62530	62531	62532	62533	62534	62535
30	41	38	10	46½	37¾	1½	62536	62537	62538	62539	62540	62541
33	44	41	10	49½	40¾	1½	62542	62543	62544	62545	62546	62547
36	47	44	10	52½	43⅝	1½	62548	62549	62550	62551	62552	62553
40	51	48	10	55½	47⅝	1½	62554	62555	62556	62557	62558	62559
42	53	50	10	57½	49⅝	1½	62560	62561	62562	62563	62564	62565
48	59	56	10	63½	55⅝	1½	62566	62567	62568	62569	62570	62571
54	65	62	10	69½	61⅝	3	62572	62573	62574	62575	62576	62577
60	71	68	10	75½	67⅝	3	62578	62579	62580	62581	62582	62583

rectangular: type 641

with cover for pit construction

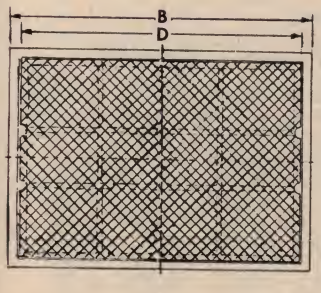
¾-in. diameter rubber gasket; silicon bronze cap screws; steel locking bar

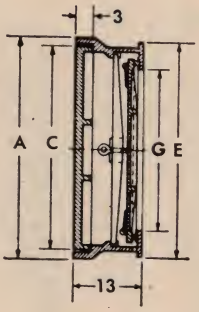
variations: 1, 2, 3, 4, 5, 7, 9, 15, 16, 18, 19 (page 3)

guarantee: ROADWAY types for 10 years

ordering: specify both type number (641) and code number (from table)

variations: 1, 3, 4, 5, 9, 15, 16, 18, 19 (page 2)





opening, in. G	opening, in. H	A	B	E	F	C	D	roadway	walkway
6	9	17	20	16	19	13¾	16¾	24500	24501
12	18	23	29	22	28	19¾	25¾	24506	24507
18	27	29	38	28	37	25¾	34¾	24512	24513
20	30	31	41	30	40	27¾	37¾	24518	24519
24	36	35	47	34	46	31¾	43¾	24524	24525
27	40½	38	51½	37	50½	34¾	48¼	24530	24531
30	45	41	56	40	55	37¾	52¾	24536	24537
33	49½	44	60½	43	59½	40¾	57¼	24542	24543
36	54	47	65	46	64	43⅝	61⅝	24548	24549
40	60	51	71	50	70	47⅝	67⅝	24554	24555
42	63	53	74	52	73	49⅝	70⅝	24560	24561
48	72	59	83	58	82	55⅝	79⅝	24566	24567
54	81	65	92	64	91	61⅝	88⅝	24572	24573
60	90	71	101	70	100	67⅝	97⅝	24578	24579

C hydrostatic and gas pressure tight

ROADWAY, WALKWAY

● circular: *hydrostatic pressure*, type 659; *gas pressure*, type 464

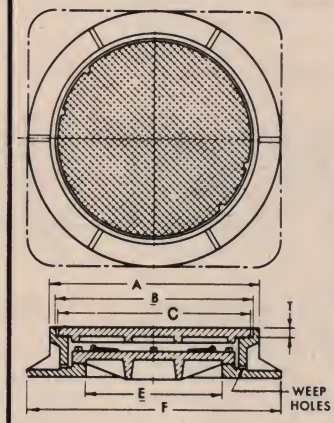
1-in. diameter holes in flange for anchor bolts, number as required (provision should be made for anchoring frame flange to structure)

frame: cast iron

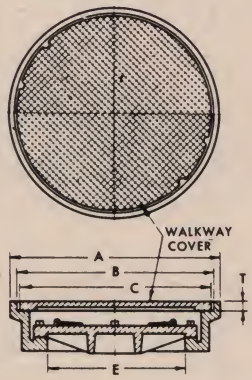
guarantee: ROADWAY types for 10 years

ordering: specify both type number and code number (from table)

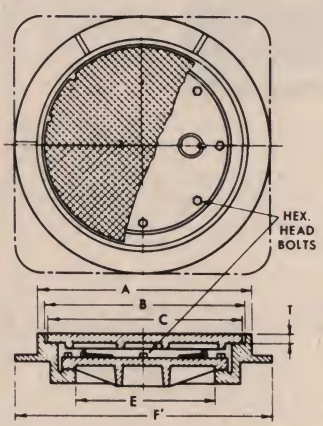
for pit



for slab



for waterproof slab



hydrostatic pressure

dimensions based on 250 psi

inner cover: ductile iron

outer cover: ▲

E	A	B	C	F	F'	D	T	type 659-CX circular flange roadway	type 659-CX circular flange walkway	type 659-CX square flange roadway	type 659-CX square flange walkway	type 659-CZ circular flange roadway	type 659-CZ circular flange walkway	type 659-CZ square flange roadway	type 659-CZ square flange walkway
18	30	28	27¾	34	38	8	1¼	22040	22041	22042	22043	22046	22047	22048	22049
21	33	31	30¾	37	41	8	1¼	22050	22051	22052	22053	22056	22057	22058	22059
24	36	34	33¾	40	44	8	1½	22060	22061	22062	22063	22066	22067	22068	22069
27	39	37	36¾	43	47	8	1½	22070	22071	22072	22073	22076	22077	22078	22079
30	42	40	39¾	46	50	8	1½	22080	22081	22082	22083	22086	22087	22088	22089
33	46	44	43¾	50	54	8	1½	22090	22091	22092	22093	22096	22097	22098	22099
35	48	46	45¾	52	56	8	1½	22100	22101	22102	22103	22106	22107	22108	22109
37	51	49	48¾	55	59	8	1½	22110	22111	22112	22113	22116	22117	22118	22119
40	54	52	51¾	58	62	10	2½	22120	22121	22122	22123	22126	22127	22128	22129
46	60	58	57¾	64	68	10	2½	22130	22131	22132	22133	22136	22137	22138	22139
52	66	64	63¾	70	74	10	2½	22140	22141	22142	22143	22146	22147	22148	22149

gas pressure

both covers: ▲

dimensions based on 45 psi uplift pressure

E	A	B	C	F	F'	D	T	type 464-CX circular flange roadway	type 464-CX circular flange walkway	type 464-CX square flange roadway	type 464-CX square flange walkway	type 464-CY roadway	type 464-CY walkway	type 464-CZ circular flange roadway	type 464-CZ circular flange walkway	type 464-CZ square flange roadway	type 464-CZ square flange walkway
18	30	28	27¾	34	38	8	1¼	36790	36791	36792	36793	36794	36795	36796	36797	36798	36799
21	33	31	30¾	37	41	8	1¼	36800	36801	36802	36803	36804	36805	36806	36807	36808	36809
24	36	34	33¾	40	44	8	1½	36810	36811	36812	36813	36814	36815	36816	36817	36818	36819
27	39	37	36¾	43	47	8	1½	36820	36821	36822	36823	36824	36825	36826	36827	36828	36829
30	42	40	39¾	46	50	8	1½	36830	36831	36832	36833	36834	36835	36836	36837	36838	36839
33	46	44	43¾	50	54	8	1½	36840	36841	36842	36843	36844	36845	36846	36847	36848	36849
35	48	46	45¾	52	56	8	1½	36850	36851	36852	36853	36854	36855	36856	36857	36858	36859
37	51	49	48¾	55	59	8	1½	36860	36861	36862	36863	36864	36865	36866	36867	36868	36869
40	54	52	51¾	58	62	10	2½	36870	36871	36872	36873	36874	36875	36876	36877	36878	36879
46	60	58	57¾	64	68	10	2½	36880	36881	36882	36883	36884	36885	36886	36887	36888	36889
52	66	64	63¾	70	74	10	2½	36890	36891	36892	36893	36894	36895	36896	36897	36898	36899

▲ E 40 in. and smaller, cast iron; E over 40 in., ductile iron

d standard ● circular

for pit construction

with cover or grating

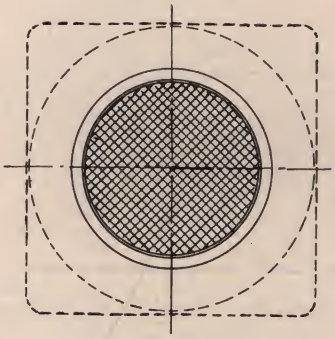
ROADWAY: type 684
WALKWAY: type 618

for sanitary and storm manholes in municipalities, housing developments, schools, manufacturing plants, parking lots; built for heavy duty; economical

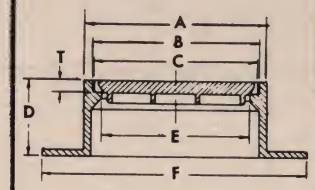
variations: 1, 2, 3, 4, 5, 6, 7, 8, 14, 15, 18, 19 (page 3)

guarantee: ROADWAY types for 10 years

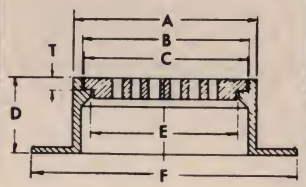
ordering: specify both type number and code number (from table); also specify plane or concave grating



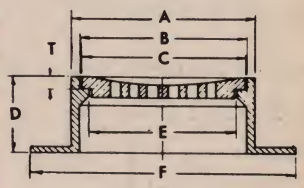
with cover



with plane grating



with concave grating



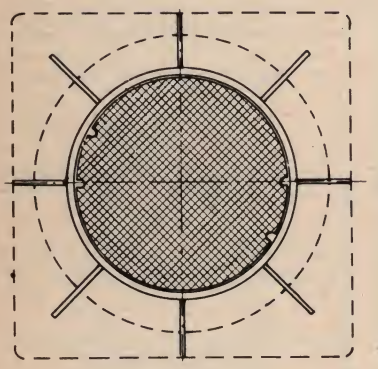
E	A	B	C	D	F	T	with cover: circular flange	with cover: square flange	with plane grating: circular flange	with plane grating: square flange	with concave grating: circular flange	with concave grating: square flange
roadway: type 684												
10¾	14	12¼	12	8	17	1¼	63300	63301	63302	63303	63304	63305
15	18¾	16¾	16½	8	27	1¼	63306	63307	63308	63309	63310	63311
18	21¼	20½	20	8	29	1½	63312	63313	63314	63315	63316	63317
22	26	24¼	24	7	32	1¼	63318	63319	63320	63321	63322	63323
22	26	24¼	24	8	32	1¼	63324	63325	63326	63327	63328	63329
24	28	26	25¾	6	34	1½	63330	63331	63332	63333	63334	63335
24	28	26	25¾	8	34	1½	63336	63337	63338	63339	63340	63341
24	28	26	25¾	9¼	34	1½	63342	63343	63344	63345	63346	63347
27	31	29	28¾	7	37	1⅜	63348	63349	63350	63351	63352	63353
30	34	32	31¾	6½	40	1½	63354	63355	63356	63357	63358	63359
30	34½	32½	32	8	40	1½	63360	63361	63362	63363	63364	63365
36	40½	38	37¾	7	46	1½	63366	63367	63368	63369	63370	63371
42	46	44	43¾	8	52	1½	63372	63373	63374	63375	63376	63377
48	52	50	49¾	8	58	1½	63378	63379	63380	63381	63382	63383
54	58	56	55¾	8	64	1½	63384	63385	63386	63387	63388	63389
60	64	62	61¾	8	70	1½	63390	63391	63392	63393	63394	63395
walkway: type 618												
8	11½	10	9¾	8	16½	1	61304	61305	61302	61303	61300	61301
12	16	14½	14	6	23	1	61310	61311	61308	61309	61306	61307
18¾	22½	20¾	20½	5	29	1	61316	61317	61314	61315	61312	61313
22	25¼	24¼	24	6	36	1⅛	61322	61323	61320	61321	61318	61319
22	26	24¼	24	6	44	1⅛	61324	61325	...	...	...	...
24	28	26¼	26	6	34	1	61330	61331	61328	61329	61326	61327
28	31⅛	30¼	30	4½	39¼	¾	61336	61337	61334	61335	61332	61333
30	34	32¼	32	6	43	1¼	61342	61343	61340	61341	61338	61339
34	37	36	35¾	5¼	46	1⅛	61348	61349	61346	61347	61344	61345
36	39½	38	37¾	4¾	48	1¼	61354	61355	61352	61353	61350	61351
42	45½	44	43¾	6	54	1¼	61360	61361	61358	61359	61356	61357
48	51½	50	49¾	6	58	1¼	61366	61367	61364	61365	61362	61363

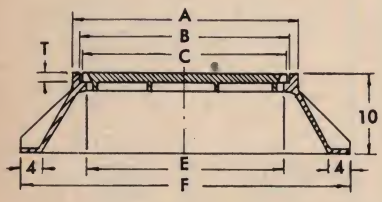
d standard ● circular

for pit construction (continued)

ROADWAY, WALKWAY

with cover type 615





furnished with either square or round flange

variations: 1, 3, 4, 5, 6, 7, 8, 9, 11, 15, 16, 18, 19 (page 3)

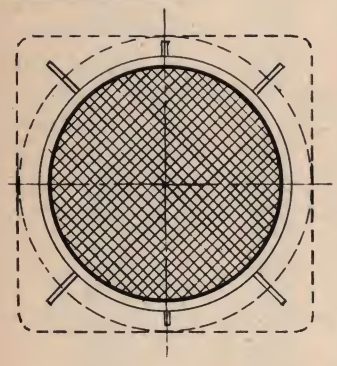
guarantee: ROADWAY types for 10 years

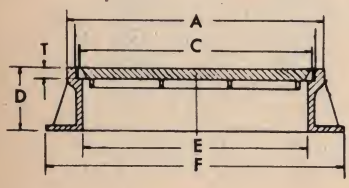
ordering: specify both type number (615) and code number (from table); also specify plane or concave grating

E	A	B	C	F	T	circular flange	square flange
roadway							
24	28	26	25¾	43	1⅜	60880	60881
27	31	29	28¾	46	1⅜	60882	60883
30	34	32	31¾	49	1⅜	60884	60885
36	40½	38½	38	55	1½	60892	60893
42	47	44	43¾	61	1½	60996	60997
walkway							
24	28	26	25¾	43	¾	60886	60887
27	31	29	28¾	46	¾	60888	60889
30	34	32	31¾	49	¾	60890	60891
36	40½	38½	38	55	1½	60894	60895
42	47	44	43¾	61	1½	60998	60999

ROADWAY

with cover type 604





furnished with either square or round flange

variations: 1, 2, 3, 4, 5, 6, 7, 8, 9, 14, 15, 18, 19 (page 3)

guarantee: 10 years

ordering: specify both type number (604) and code number (from table)

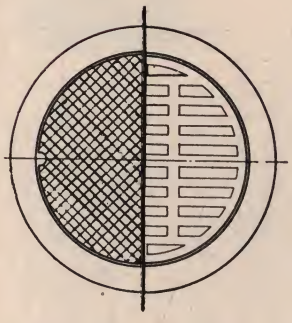
E	A	C	D•	F	T	circular flange	square flange
15¾	19½	17½	8	24	1	60461	60450
24	28½	26	6	38	1½	60462	60451
24	28½	26	8	38	1½	60463	60452
26½	31	28¼	10	37	1¼	60464	60453
30	34½	32	8	44	1½	60465	60454
30	35½	32¼	12	46	1½	60466	60455
34	39½	36¼	11	46½	1½	60467	60456
36	41⅛	37⅞	8	48	1½	60468	60457
36	42½	38¼	12	48	2	60469	60458
42	46¾	44½	10	58	3	60470	60459
48	53	49⅝	10	57¼	1½	60471	60460

• May be varied as desired

for slab construction

with cover or grating

ROADWAY: type 612
WALKWAY: type 630



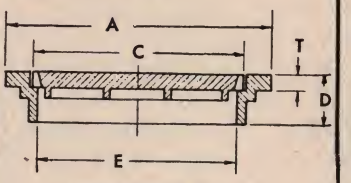
flanges may be increased to any desired square, rectangle or circle; dimension D may be varied as desired

variations: 1, 3, 4, 5, 6, 7, 8, 9, 10, 18, 19 (page 3)

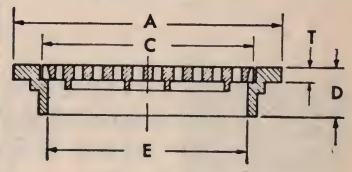
guarantee: ROADWAY types for 10 years

ordering: specify both type number and code number (from table); also specify proper depth

with cover



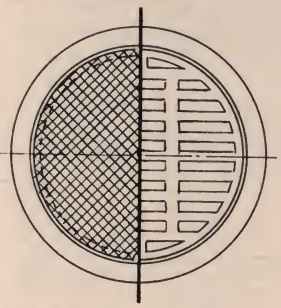
with plane grating



E	A	C	T	cover: depth, D, in. = 4½	6	8	10	12	grating: depth, D, in. = 4½	6	8	10	12
roadway: type 612													
6	12	8	1	61905	61906	61907	61908	61909	61900	61901	61902	61903	61904
9	15	11	1	61915	61916	61917	61918	61919	61910	61911	61912	61913	61914
12	19	14	1	61925	61926	61927	61928	61929	61920	61921	61922	61923	61924
16	22	18	1¼	61935	61936	61937	61938	61939	61930	61931	61932	61933	61934
18	24	19	1⅜	61945	61946	61947	61948	61949	61940	61941	61942	61943	61944
20	28½	23	1¼	61955	61956	61957	61958	61959	61950	61951	61952	61953	61954
24	32½	26	1½	61965	61966	61967	61968	61969	61960	61961	61962	61963	61964
30	36½	32	1½	61975	61976	61977	61978	61979	61970	61971	61972	61973	61974
36	42½	38	1½	61985	61986	61987	61988	61989	61980	61981	61982	61983	61984
42	50	44	1½	61995	61996	61997	61998	61999	61990	61991	61992	61993	61994
48	56	50	1½	63205	63206	63207	63208	63209	63200	63201	63202	63203	63204
54	62	56	1½	63215	63216	63217	63218	63219	63210	63211	63212	63213	63214
60	68	62	2	63225	63226	63227	63228	63229	63220	63221	63222	63223	63224
walkway: type 630													
6	12	8	1	62800	62801	62802	62803	62804	62805	62806	62807	62808	62809
9	15	11	1	62810	62811	62812	62813	62814	62815	62816	62817	62818	62819
12	19	14	1	62820	62821	62822	62823	62824	62825	62826	62827	62828	62829
16	22	18	1¼	62830	62831	62832	62833	62834	62835	62836	62837	62838	62839
18	24	19	1⅜	62840	62841	62842	62843	62844	62845	62846	62847	62848	62849
20	28½	23	1¼	62850	62851	62852	62853	62854	62855	62856	62857	62858	62859
24	32½	26	1½	62860	62861	62862	62863	62864	62865	62866	62867	62868	62869
30	36½	32	1½	62870	62871	62872	62873	62874	62875	62876	62877	62878	62879
36	42½	38	1½	62880	62881	62882	62883	62884	62885	62886	62887	62888	62889
42	50	44	1½	62890	62891	62892	62893	62894	62895	62896	62897	62898	62899
48	56	50	1½	62900	62901	62902	62903	62904	62905	62906	62907	62908	62909
54	62	56	1½	62910	62911	62912	62913	62914	62915	62916	62917	62918	62919
60	68	62	2	62920	62921	62922	62923	62924	62925	62926	62927	62928	62929

with cover or grating

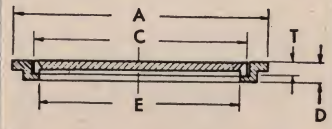
WALKWAY: type 621



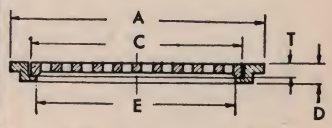
variations: 1, 3, 4, 5, 6, 9, 10, 15, 16, 18, 19 (page 3)

ordering: specify both type number (621) and code number (from table)

with cover



with grating



E	A	C	D	T	plane	concave
6	10	7	1⅞	¾	60000	60002	60001
9	13	10	1⅞	¾	60003	60005	60004
12	16	13	1⅞	¾	60006	60008	60007
16	20¼	17	1⅞	¾	60009	60011	60010
18	22¼	19	1⅞	¾	60012	60014	60013
20	24	21	1⅞	1¼	60015	60017	60016
24	28	25	1⅞	1¼	60018	60020	60019
27	31	28¼	1⅞	1¼	60021	60023	60022
30	34½	31	1⅞	1¼	60024	60026	60025
32	38	34	2½	1½	60027	60029	60028
36	41	37¾	2	1¼	60030	60032	60031
42	47	43¾	2	1¼	60033	60035	60034
48	53	49¾	2	1¼	60036	60038	60037
54	59	55¾	2	1¼	60039	60041	60040

d **standard** ■ **square**

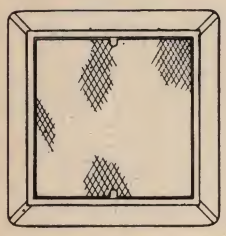
for pit construction

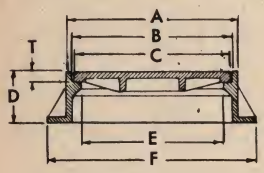
ROADWAY:
with cover type 290

variations: 1, 7, 8, 9, 10, 11, 13, 15, 19 (page 3)

guarantee: ten years

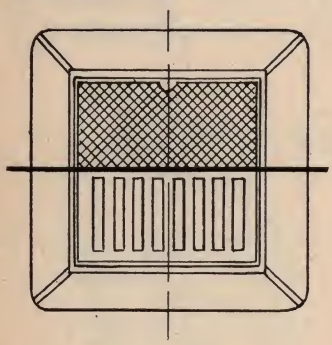
ordering: specify both type number (290) and code number (from table)





frame					cover			frame					cover		
E	D	F	A	B	C	T		E	D	F	A	B	C	T	
6	5	14	9¼	8	7¾	1	26930	24	6	33	27¾	26	25¾	1¼	35108
8½	5	13¾	11¼	10¼	10	2⅝	37885	24	8	35	27½	26	25¾	1½	26393
9½	9⅝	21½	12½	11½	11¼	3	25406	26	10	36	29	27½	27¼	3	35800
11½	9	20	14	13¼	13	2½	25404	27½	11½	40	32	30	29½	1⅜	25597
16	5	26	19½	18	17¾	1¼	29655	30	6¼	41	33¾	32¼	32	2	39635
18	6	28	21¾	20	19¾	2	33916	32	4	44	36	34¼	34	1	28238
18	8	32	21¾	20	19¾	2	34968	34	7	44	37¾	36	35¾	1½	35726
21¼	8	36	25¾	24	23¾	1½	29595	34	8½	46	38¼	36¼	36	1¼	26338
22	4½	33½	26¼	24¼	24	1¾	29679	36	7	46	40	38	37¾	1½	20303
22	5	32¼	26¾	24¼	24	1¾	23994	36	8	48	40	38	37¾	1½	39636
22	6	36	27	24¼	24	1⅜	34921	40	5	50	44	42	41¾	1½	18706
22	8	40	27	24¼	24	1¾	25914	42	5	52	46	44	43¾	1½	18707
23	4	36¼	25¼	24¼	24	1¼	30411	48	5	57	52	50	49⅝	1½	26021
24	6	28	21¾	20	19¾	2	33679	48	8	58	52	50	49¾	1½	39367

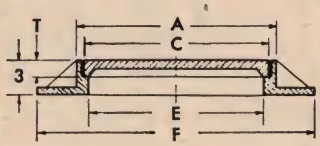
WALKWAY:
with cover or grating type 619

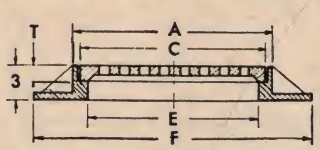


depth of casting and flange dimensions may be varied as desired; lock operated if specified

variations: 1, 3, 4, 5, 6, 7, 8, 9, 10, 15, 16 (page 3)

ordering: specify both type number (619) and code number (from table)

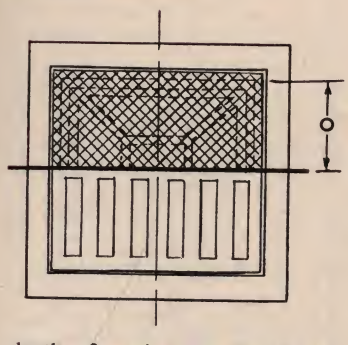




E	A	F	C	T	with cover	with plane grating
6	8½	12	7¼	1¼	61201	61200
8	10½	14	9¼	1¼	61203	61202
10	12½	16	11¼	1½	61205	61204
12	14½	18	13¼	1½	61207	61206
14	16½	20	15¼	1½	61209	61208
16	18½	22	17¼	1½	61211	61210
18	20½	24	19¼	1½	61213	61212
20	22½	26	21¼	1½	61215	61214
22	24½	28	23¼	1½	61217	61216
24	26½	30	25¼	1½	61219	61218
26	29	32	27¼	1½	61221	61220
28	31	34	29¼	1½	61223	61222
30	33	36	31¼	1½	61225	61224
32	35	38	33¼	1½	61227	61226
34	37	40	35¼	1½	61229	61228
36	39	42	37¼	1½	61231	61230
42	45	48	43¼	1½	61233	61232
48	51	54	49¼	1½	61235	61234
54	57	60	55¼	1½	61237	61236
60	63	66	61¼	1½	61239	61238
66	69	72	67¼	1½	61241	61240
72	75	78	73¼	1½	61243	61242

for slab construction

ROADWAY: type 613



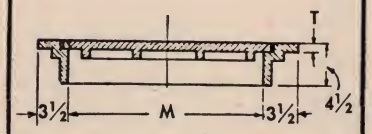
depth of casting and flange dimensions may be varied as desired; cover dimensions are 2 in. longer than dimensions M and O

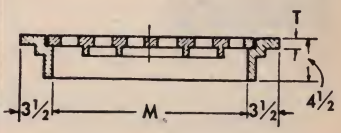
variations: 1, 3, 4, 5, 6, 15, 16, 18, 19 (page 3)

guarantee: ten years

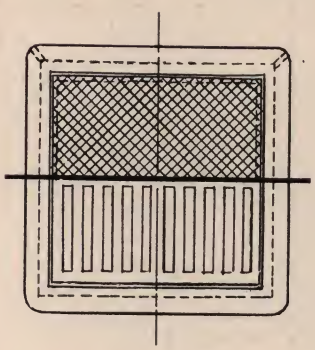
ordering: specify both type number (613) and code number (from table)

clear opening M	O	T	with cover	with plane grating
6	6	1	61894	61895
12	12	1	61880	61887
16	16	1	61881	61888
20	20	1	61882	61889
24	24	1¼	61883	61890
27	27	1¼	61896	61897
30	30	1¼	61884	61891
36	36	1½	61885	61892
42	42	2½	61886	61893
48	48	3	61898	61899





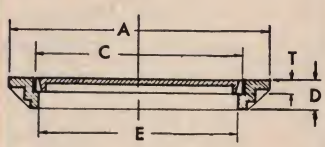
WALKWAY: type 622

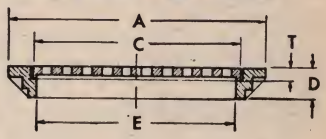


depth of casting may be varied as desired

variations: 1, 3, 4, 5, 6, 9, 10, 15, 16 (page 3)

ordering: specify both type number (622) and code number (from table)





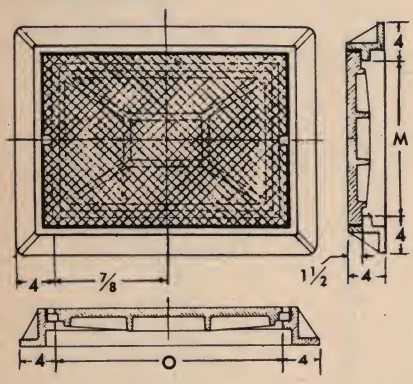
E	A	D•	C	T	with cover	with plane grating
6	12	3	7¼	1¼	61351	61350
8	14	3	9¼	1¼	61353	61352
10	16	3	11¼	1½	61355	61354
12	18	3	13¼	1½	61357	61356
14	20	3	15¼	1½	61359	61358
16	22	3	17¼	1½	61361	61360
18	24	3	19¼	1½	61363	61362
20	26	3	21¼	1½	61365	61364
22	28	3	23¼	1½	61367	61366
24	30	3	25¼	1½	61369	61368
26	32	3	27¼	1½	61371	61370
28	34	3	29¼	1½	61373	61372
30	36	3	31¼	1½	61375	61374
32	38	3	33¼	1½	61377	61376
34	40	3	35¼	1½	61379	61378
36	42	3	37¼	1½	61381	61380
42	48	3	43¼	1½	61383	61382
48	54	3	49¼	1½	61385	61384
54	60	4	55¼	1½	61387	61386
60	66	4	61¼	1½	61389	61388
66	72	4	67¼	1½	61391	61390
72	78	4	73¼	1½	61393	61392

• May be varied as desired.

ld | **standard** | **rectangular**

for pit construction

ROADWAY:
with cover type 610



depth of casting and flange dimensions may be varied as desired; cover dimensions are 2 in. longer than dimensions M and O

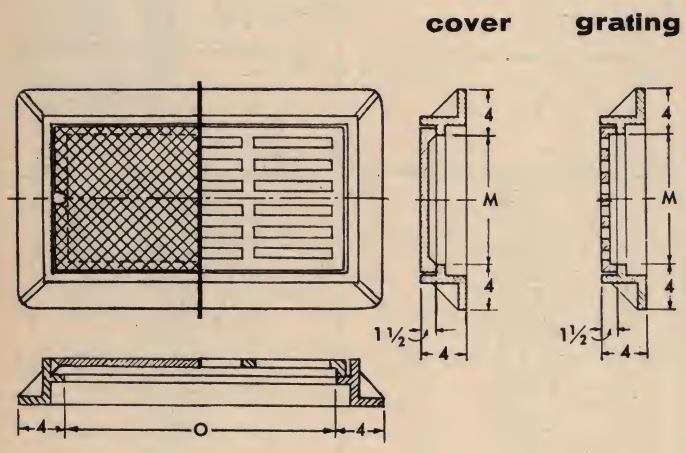
variations: 1, 3, 4, 5, 6, 7, 8, 15, 16, 18, 19 (page 3)

guarantee: ten years

ordering: specify both type number (610) and code number (from table)

clear opening			clear opening		
M	O		M	O	
10	15	60700	30	45	60720
	20	60701		60	60721
12	18	60702	32	48	60722
	24	60703		64	60723
14	21	60704	34	51	60724
	28	60705		68	60725
16	24	60706	36	54	60726
	32	60707		72	60727
18	27	60708	38	57	60728
	36	60709		76	60729
20	30	60710	40	60	60730
	40	60711		80	60731
22	33	60712	42	63	60732
	44	60713		80	60733
24	36	60714	44	66	60734
	48	60715		80	60735
26	39	60716	46	69	60736
	52	60717		80	60737
28	42	60718	48	72	60738
	56	60719		80	60739

WALKWAY:
with cover or grating type 620



depth of casting and flange dimensions may be varied as desired; lock operated when specified

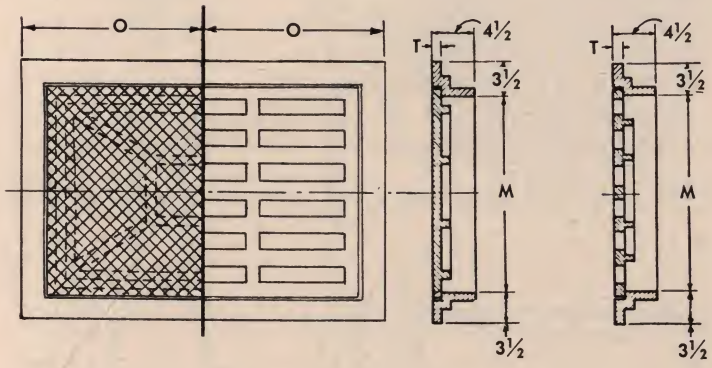
variations: 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 15, 16 (page 3)

ordering: specify both type number (620) and code number (from table)

M	O	cover	grating	M	O	cover	grating
10	15	61250	62950	30	45	61260	62960
	20	61270	62970		60	61280	62980
	30	22900	...		90	22940	...
	40	22902	...		120	22942	...
12	18	61251	62951	32	48	61261	62961
	24	61271	62971		64	61281	62981
	36	22904	...		96	22944	...
	48	22906	...		128	22946	...
14	21	61252	62952	34	51	61262	62962
	28	61272	62972		68	61282	62982
	42	22908	...		102	22948	...
	56	22910	...		136	22950	...
16	24	61253	62953	36	54	61263	62963
	32	61273	62973		72	61283	62983
	48	22912	...		108	22952	...
	64	22914	...		144	22954	...
18	27	61254	62954	38	57	61264	62964
	36	61274	62974		76	61284	62984
	54	22916	...		114	22956	...
	72	22918	...		152	22958	...
20	30	61255	62955	40	60	61265	62965
	40	61275	62975		80	61285	62985
	60	22920	...		120	22960	...
	80	22922	...		160	22962	...
22	33	61256	62956	42	63	61266	62966
	44	61276	62976		80	61286	62986
	66	22924	...		126	22964	...
	88	22926	...		160	22966	...
24	36	61257	62957	44	66	61267	62967
	48	61277	62977		80	61287	62987
	72	22928	...		132	22968	...
	96	22930	...		160	22970	...
26	39	61258	62958	46	69	61268	62968
	52	61278	62978		80	61288	62988
	78	22932	...		138	22972	...
	104	22934	...		160	22974	...
28	42	61259	62959	48	72	61269	62969
	56	61279	62979		80	61289	62989
	84	22936	...		144	22976	...
	112	22938	...		160	22978	...

for slab construction

ROADWAY:
with cover or grating type 613



depth of casting and flange dimensions may be varied as desired; cover dimensions are 2 in. longer than dimensions M and O

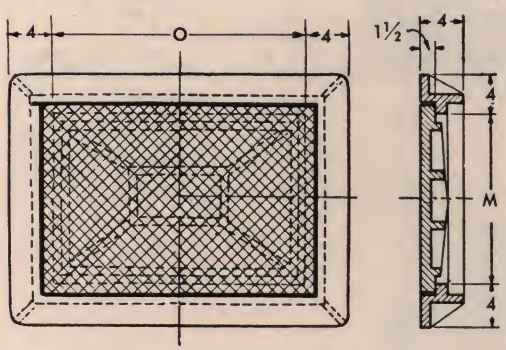
variations: 1, 3, 4, 5, 6, 15, 16, 18, 19 (page 3)

guarantee: ten years

ordering: specify both type number (613) and code number (from table)

clear opening				plane
M	O	T	cover	grating
12	18	1	60800	60812
	24	1	60801	60813
16	24	1	60802	60814
	32	1	60803	60815
20	30	1¼	60804	60816
	40	1¼	60805	60817
24	36	1¼	60806	60818
	48	1¼	60807	60819
30	45	1½	60808	60820
	60	1½	60809	60821
36	54	1½	60810	60822
	72	1½	60811	60823

ROADWAY:
with cover type 614



depth of casting and flange dimensions may be varied as desired; cover dimensions are 2 in. longer than dimensions M and O

variations: 1, 3, 4, 5, 6, 7, 8, 15, 16, 18, 19 (page 3)

guarantee: ten years

ordering: specify both type number (614) and code number (from table)

clear opening			clear opening		
M	O		M	O	
10	15	60830	30	45	60850
	20	60831		60	60851
12	18	60832	32	48	60852
	24	60833		64	60853
14	21	60834	34	51	60854
	28	60835		68	60855
16	24	60836	36	54	60856
	32	60837		72	60857
18	27	60838	38	57	60858
	36	60839		76	60859
20	30	60840	40	60	60860
	40	60841		80	60861
22	33	60842	42	63	60862
	44	60843		80	60863
24	36	60844	44	66	60864
	48	60845		80	60865
26	39	60846	46	69	60866
	52	60847		80	60867
28	42	60848	48	72	60868
	56	60849		80	60869

1e valve box type

● circular • for pit construction • ROADWAY

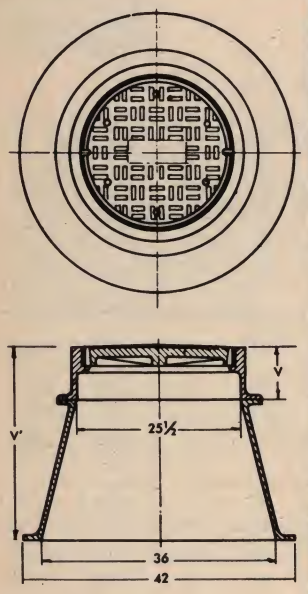
type 660

variations: 1, 2, 3, 4, 5, 6, 7, 8, 15, 18, 19 (page 3)

guarantee: 10 years

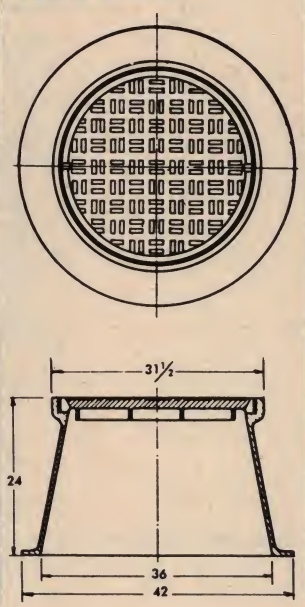
ordering: specify type number (660) and code number (from table)

type 660-A skirt, frame, cover



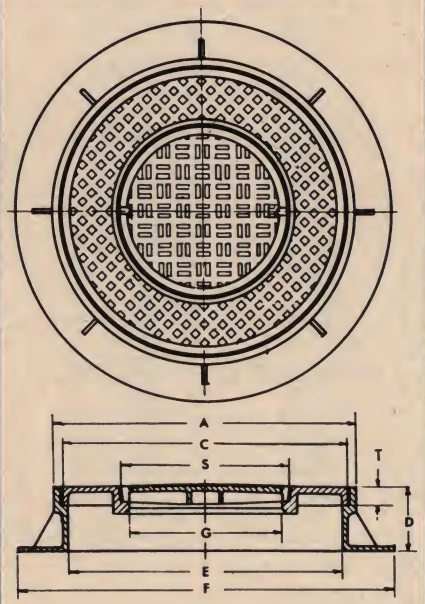
V	V'	code no.
6	30	61820
8	32	61821
9½	33½	61822
12	36	61823

type 660-B skirt, cover



code no. 28610

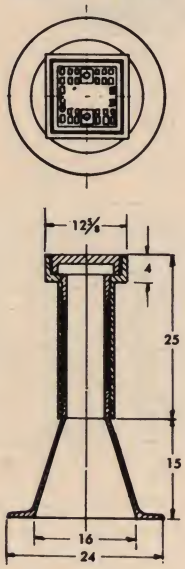
type 660-C frame, double cover



E	A	G	D	F	C	T	S	code no.
30	34½	22	8	42	32	1½	22	61828
36	41½	21⅜	8	48½	37¾	1⅜	23¾	61825
42	46¾	24	10	58	44½	3	26	61826
48	53	22	8	60	49⅝	1½	24	61829
54	60	22	8	64	57¾	1½	24	61830
60	66	22	8	70	66¾	1½	24	61831

type 660-D frame, sleeve, cover

depth: 40 to 60 in.



code no. 25284

1f non-rocking • tamper-proof

■ square • ROADWAY, WALKWAY

ELKINGTON-GATIC

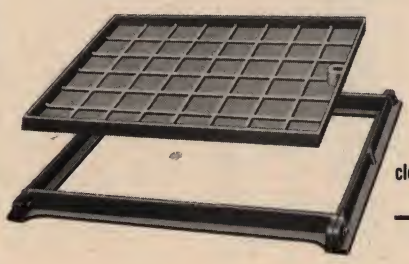
manufactured under U.S. Pat. nos. 2109287, 2249603, 2545771

clear opening, in.	depth and width of frame	code no.
18 x 18	6 x 4⅞	92132
21 x 21	6 x 4⅞	92143
30 x 30	6 x 5¼	92156
36 x 36	6 x 5¼	92161

This ELKINGTON-GATIC manhole cover, with its tight-fitting frame, is based on a radically new principle of design and metallurgy. Its outstanding feature is that both castings are absolutely true to pattern and entirely free of distortion and internal strain. They fit so tight that a 1/100-inch feeler cannot be inserted between the cover and the vertical wall of the frame. Time does not develop distortion. The cover can be opened only by a special jack-key, furnished.

As a result, the ELKINGTON-GATIC is not only non-rocking but tamper-proof. With a grease film on the contacting surfaces, the unit is also air-tight, gas-tight and insect-proof. Under heavy, fast traffic, the cover cannot move, wear or rock.

The ELKINGTON-GATIC can be furnished with portable hinges, if required. Cover is hollowed for concrete filling.



clear opening, in.	depth	width	code no.
18 x 18	1⅞	22 x 24	95532
21 x 21	1⅞	25 x 27	95540
24 x 24	1⅞	28 x 30	95547
30 x 30	1⅞	34 x 36	95556

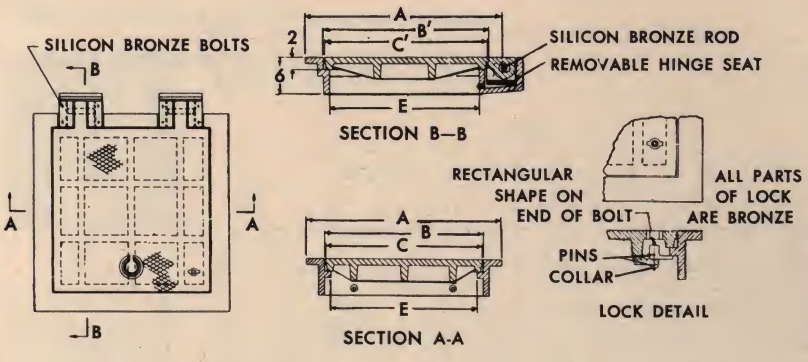
g with hinged cover for slab construction

ROADWAY • square: type 644

variations: 7, 8, 9, 11, 12, 15, 18, 19 (page 3)

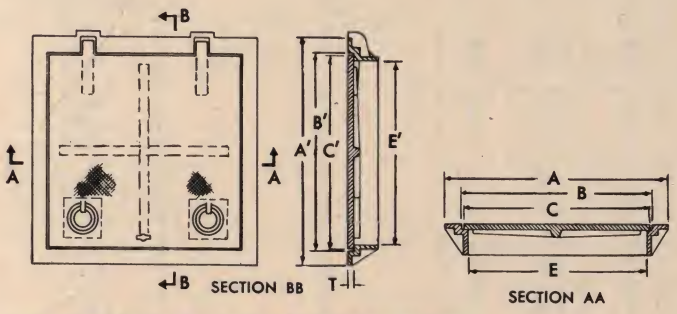
guarantee: ROADWAY types for 10 years

ordering: specify both type number (644) and code number (from table)



E	A	B	B'	C	C'	without lock	with lock
8	16	10	10¾	9¾	10¼	19170	19171
12	20	14	14¾	13¾	14¼	19172	19173
18	26	20	20¾	19¾	20¼	19174	19175
20	28	22	22¾	21¾	22¼	19176	19177
24	32	26	26¾	25¾	26¼	19178	19179
27	35	29	29¾	28¾	29¼	19180	19181
30	38	32	32¾	31¾	32¼	19182	19183
33	41	35	35¾	34¾	35¼	19184	19185
36	44	38	38¾	37¾	38¼	19186	19187
39	47	41	41¾	40¾	41¼	19188	19189
42	50	44	44¾	43¾	44¼	19190	19191

WALKWAY • square, rectangular: type 678



- depth of frame 4 in. unless otherwise specified
- rectangular units larger than 24 in. x 36 in. with cover in two equal parts
- key cannot be removed unless cover is locked
- cast aluminum covers as specified
- ratchet only if specified

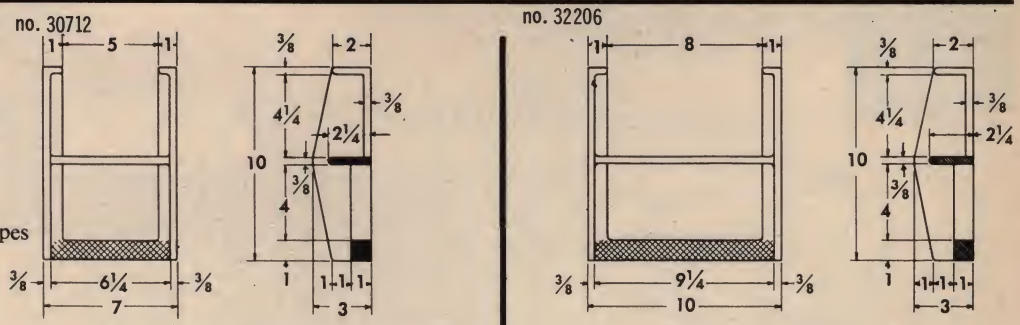
frame E	E'	A	A'	B	B'	cover C	C'	T	without lock	with lock
12	12	18	18	14	14	13½	13½	⅝	16200	16201
	18	18	24	14	20	13½	19½	⅝	16202	16203
	24	18	30	14	26	13½	25½	⅝	16204	16205
18	18	24	24	20	20	19½	19½	¾	16206	16207
	27	24	33	20	29	19½	28½	¾	16208	16209
	36	24	42	20	38	19½	37½	¾	16210	16211
24	24	30	30	26	26	25½	25½	¾	16212	16213
	36	30	42	26	38	25½	37½	¾	16214	16215
	48	30	54	26	50	25½	49½	¾	16216	16217
30	30	36	36	32	32	31½	31½	¾	16218	16219
	45	36	51	32	47	31½	46½	¾	16220	16221
	60	36	66	32	62	31½	61½	¾	16222	16223
36	36	42	42	38	38	37½	37½	¾	16224	16225
	54	42	60	38	56	37½	55½	¾	16226	16227
	72	42	78	38	74	37½	73½	¾	16228	16229

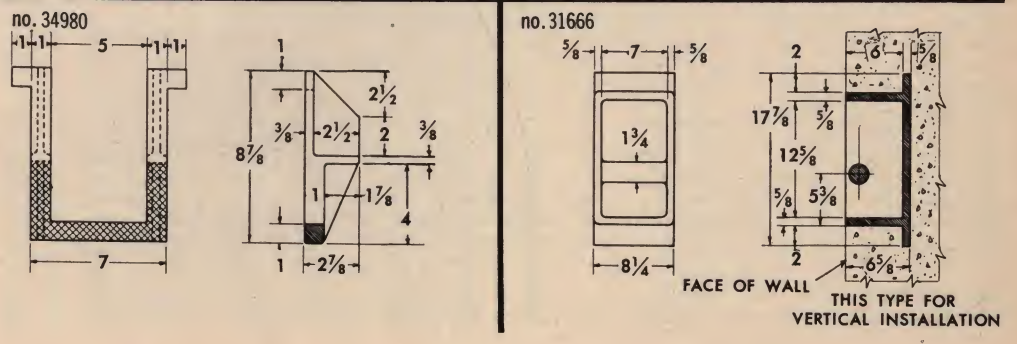
h manhole steps

type 663

cast aluminum, steel and wrought iron types available on request

ordering: by code number

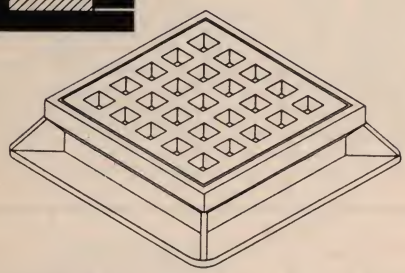


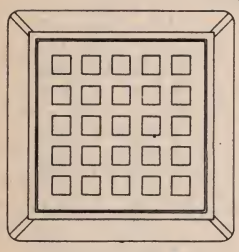


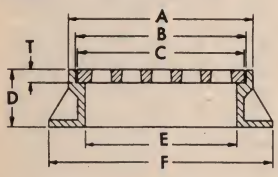
2a standard • *plane grating* ROADWAY

■ square

type 309





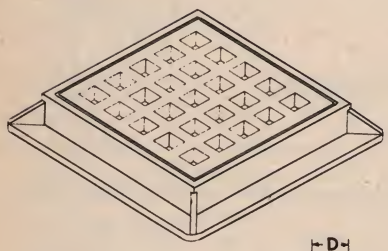


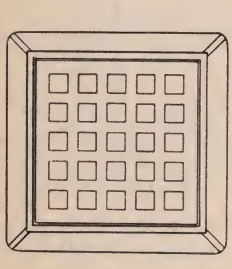
guarantee: ten years

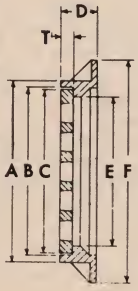
ordering: specify both type number (309) and code number (from table)

frame E	grating D	F	A	B	C	T	openings no.	openings size	code no.
16	10	26	20	18	17¾	1½	12	1½ x 6¾	20200
18	6	26	20½	19½	19¼	1⅝	20	1 x 7½	19084
20	8	30	25	22	21¾	1½	..	...	19923
24	6	34	29¼	26¼	26	1½	36	2⅛ x 2⅛	19906
	8	34	29¼	26¼	26	1½	36	2⅛ x 2⅛	19907
	10	40¼	29¼	26¼	26	1½	36	2⅛ x 2⅛	28200
26	10	36½	31	28	27¾	1½	27	1⅝ x 6⅞	20202
30	6	40½	35	32	31¾	1½	..	...	19924
	8	40½	35	32	31¾	1½	..	...	19925
	10	40½	35	32	31¾	1½	..	...	28202
36	6	46½	41	38	37¾	1½	49	3¼ x 3¼	19910
	8	46½	41	38	37¾	1½	49	3¼ x 3¼	19911
	10	46½	41	38	37¾	1½	49	3¼ x 3¼	28204
42	6	52½	47	44	43¾	1½	..	...	19914
	8	52½	47	44	43¾	1½	..	...	19915
	10	52½	47	44	43¾	1½	..	...	28206
48	6	58½	53	50	49¾	1½	..	...	19918
	8	58½	53	50	49¾	1½	..	...	19919
	10	58½	53	50	49¾	1½	..	...	28208
54	6	64½	59	56	55¾	1½	..	...	19920
	8	64½	59	56	55¾	1½	..	...	19921
	10	64½	59	56	55¾	1½	..	...	28209

type 310







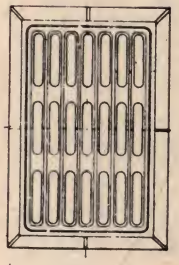
guarantee: ten years

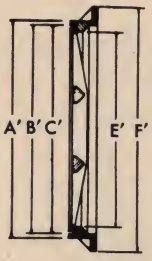
ordering: specify both type number (310) and code number (from table)

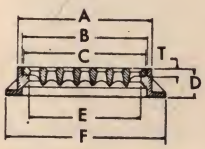
frame E	grating D	F	A	B	C	T	openings no.	openings size	openings area	code no.
9½	5	21½	12¼	11½	11¼	3	9	2 x 2	36	19430
10	4	20	13½	12¼	12	1	36	1 x 1	36	25986
11½	4	20	15	13¾	13½	1	12	1 3/16 x 5 5/16	77	25975
16	6¾	26	19½	18	17¾	1½	25	2 x 2	100	22580
	4	27	19¾	18¼	18	1¼	64	1 x 1	64	29180
18	8	32	21¾	20	19¾	2	64	1⅜ x 1⅜	121	21593
22	4	32¼	26¾	24¼	24	1¾	36	2⅜ x 2⅜	203	19334
	5	32¼	26¾	24¼	24	1¾	36	2⅜ x 2⅜	203	31392
	8	32¼	26¾	24¼	24	1¾	36	2⅜ x 2⅜	203	19333
	8¾	36	25¾	24¼	24	1¼	21	1¾ x 5⅞	216	27527
	8	40¼	26⅞	24¼	24	1¾	25	2⅞ x 2⅞	207	25414
24	6	33	27¾	26¼	26	1¼	36	2⅛ x 2⅛	163	33952
	8	35	27½	26	25¾	1½	36	2⅛ x 2⅛	163	30889
26½	7	37	30	29	28½	2	64	2 x 2	256	22585
30	6¼	41	33¾	32¼	32	2	27	2 x 8	432	39626
32	4	44	36	34¼	34	2½	49	3¼ x 3¼	518	25471
34	6	44	38	36	35¾	3	49	3¼ x 3¼	518	39629
36	8	48	40	38	37¾	1½	49	3¼ x 3¼	518	39634

rectangular

type 325





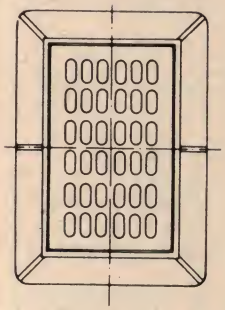


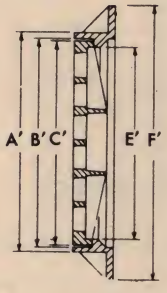
guarantee: ten years

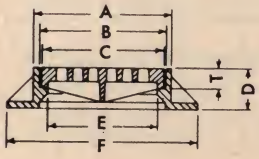
ordering: specify both type number (325) and code number (from table)

frame	grating														
E	E'	D	F	F'	A	A'	B	B'	C	C'	T	openings			code no.
												no.	size	area	
10	21	5	20	31	14	25	12	23	11¾	22¾	1½	8	1⅜ x 9⅜	100	39659
	43¾	5	20	53¾	14	47¾	12	45¾	11¾	45½	1½	16	1⅜ x 9⅜	200	22547
15¼	45¼	3½	22¾	52¾	20¼	50¼	18¼	48¼	18	48	2¼	24	1½ x 10⅝	370	22548
15¾	21¾	3¼	22¾	28¾	20¼	26¼	18¼	24¼	18	24	2¼	12	1½ x 10⅝	185	32392
17¼	21	4	23¾	30½	20¾	24½	19¼	23	19	22¾	1⅞	14	1½ x 9⅜	190	34965
18½	32⅛	4	28	41½	22¾	36⅜	20¾	34⅜	20½	34⅛	1¼	24	1⅛ x 9	236	21362
19½	33½	5	28	42	23½	37½	22	36	21¾	35¾	1¼	21	1½ x 9	273	32316
	36	5	30½	46¾	23⅜	39⅝	21⅞	38¼	21⅝	38	2	21	1½ x 11¼	344	30205
	45	5	28	54	23½	49½	22	48	21¾	47½	1¼	28	1½ x 10	406	32315
	73	5	28	78	23½	73½	22	72	21¾	71½	1¼	42	1½ x 9	546	22549
	93	5	28	102	23½	97½	22	96	21¾	95½	1¼	56	1½ x 10	812	22550
22	26	5	32	36	26	30	24	28	23¾	27¾	1⅝	16	1½ x 11⅝	271	22546
	33	4	30	41	25½	36½	24	35	23¾	34¾	1½	21	1½ x 10	305	39421
24	30	5	34	40	28	34	26¼	32¼	26	32	3	24	1½ x 8½	294	33121
	36	5	34	46	28	40	26¼	38¼	26	38	3	24	1½ x 10½	366	33120
	36	3½	32	44	28	40	26	38	25¾	37¾	2½	27	1½ x 10½	412	36096
	62	5	34	72¼	28	66¼	26¼	64½	26	64	3	48	1½ x 8½	588	22551
	76	5	34	84¼	28	78¼	26¼	76½	26	76	3	48	1½ x 10½	732	22552
27½	47	5	36	55½	32	51½	30	40½	29¾	49¼	1	40	1½ x 10½	610	18743
41½	45	5	50	54	45½	49½	44	48	43½	47½	1¼	56	1½ x 10	812	22553
50	30	5	60	40	54	34	52¼	32¼	52	32	3	48	1½ x 8½	588	22554
	36	5	60	46	54	40	52¼	38¼	52	38	3	48	1½ x 10	696	22555

type 326







guarantee: ten years

ordering: specify both type number (326) and code number (from table)

frame	grating														
E	E'	D	F	F'	A	A'	B	B'	C	C'	T	openings			code no.
												no.	size	area	
12	36	6	20	44	15½	39½	14	38	13¾	37¾	2	28	. . .	. . .	38459
	74	6	20	82	15½	77¼	14	76	13¾	75¾	2	56	. . .	. . .	22533
16	28	6	28	40	19⅞	31⅞	18⅜	30⅜	18⅛	30⅛	3	36	1½ x 3⅝	185	32381
	58	6	28	71	19⅞	62	18⅜	60½	18⅛	60¼	3	72	1½ x 3⅝	370	22534
19	22¾	8	26½	31	21¾	25¾	20¼	24¼	20	24	1¼	30	1⅝ x 3	129	29404
	32	4	28	41⅜	22½	35⅝	21	34⅛	20¾	33⅞	1	35	2 x 3¼	197	32308
	45	5	28	54	23½	49½	22	48	21¾	47¾	1¼	60	. . .	. . .	22542
	66	4	28	75	22½	69½	21	68	20¾	67¾	1	70	2 x 3¼	394	22536
	93	5	28	102	23½	97½	22	96	21¾	95½	3	120	. . .	. . .	22535
24	36	3½	32	44	28	40	26	38	25¾	37¾	2½	72	1⅝ x 3½	366	31680
	74	3½	32	82	28	78	26	76	25¾	75½	2½	144	1⅝ x 3½	732	22537
26	46	6	34	54	29½	49½	28	48	27¾	47¾	1½	80	2 x 3⅜	471	22543
	94	6	34	102	29½	97½	28	96	27¾	95½	1½	160	2 x 3⅜	942	22538
27	46	6	36	55	30½	49½	29	48	28¾	47¾	1¼	90	1⅞ x 3½	520	29400
	94	6	36	103	29½	97½	29	96	28¾	95½	1¼	180	1⅞ x 3½	1040	22539
44	45	5	53	54	48½	49½	47	48	43½	47¾	1¼	120	. . .	. . .	22540
36	56	3½	44	58	40	54	38	52	37¾	51½	2½	144	1⅝ x 3½	732	22544
46	56	6	56½	66½	49½	59½	48	58	47¾	57½	1¼	180	1⅞ x 3½	1040	22545

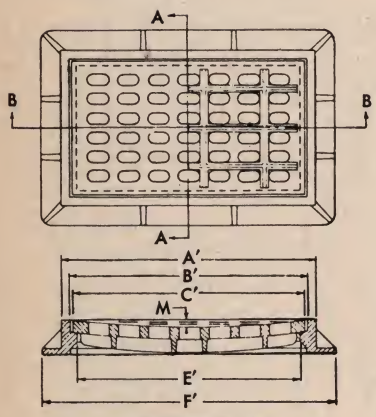
2b standard • *concave grating* ROADWAY

rectangular

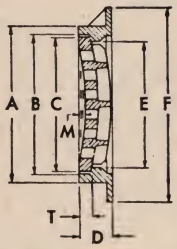
type 339

guarantee: ten years

ordering: specify both type number (339) and code number (from table)



SECTION B—B

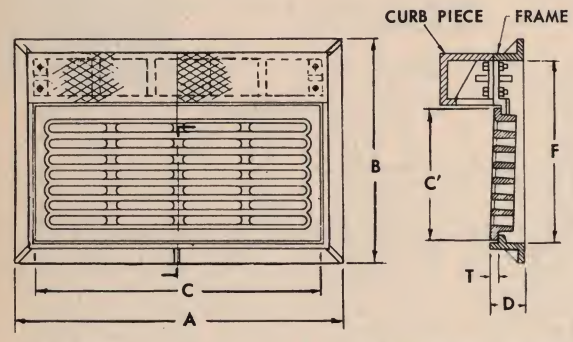


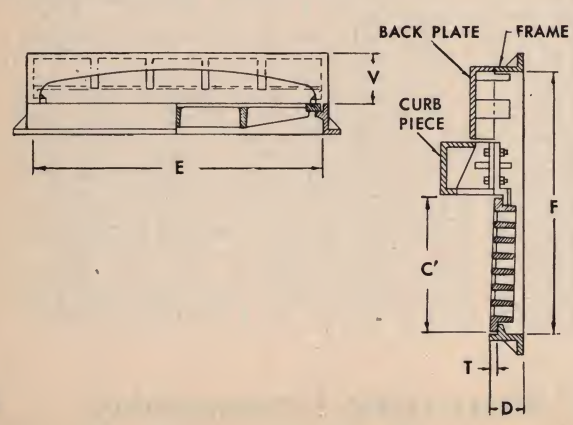
SECTION A-A

frame						grating							
E	E'	D	F F'	A A'	B B'	C	C'	T	M	no. opngs	size openings	total open area	code no.
12½	17½	4	20 x25	15¾ x20¾	14¼ x19	14	18¾	1½	⅝	18	1½ x1¾	31	38458
14	26	6½	23¾ x35¾	17½ x29½	16 x28	15¾	27¾	2	¾	24	1⅞ x3½	139	29483
17	22½	4½	27 x32½	20¾ x26	19¼ x24½	18¾	24	2	½	30	1¾ x3⅜	249	29417
19	32	4	28 x41⅜	22¼ x35⅞	20¾ x34⅜	20½	34⅛	2¾	¾	42	2 x3½	258	35194
	35	5⅛	30¼ x46½	24¼ x40½	21¼ x37½	21	37¼	2	1	42	1¾ x3½	233	29480
	45	5	28 x54	23½ x49½	22 x48	21½	47½	1¼	1¼	60	2 x3	308	25101
19½	36	5	30½ x46¾	24½ x40⅞	21⅞ x38¼	21⅝	38	2	⅝	49	1⅝ x3⅞	280	26118
20	34	5½	28 x42	23½ x37½	22 x36	21½	35½	1¼	¾	36	2 x4¼	274	20246
21	27	3	21 x27½	25¼ x31¾	23 x29½	22¾	29¼	2					26447
24	34	4¼	32 x42¼	28¾ x38¼	26½ x36¼	26¼	36	3					26219
27	47	5	36 x55½	32 x51½	30 x49½	29½	49	1	1½	80	1¾ x3¼	370	25115
33	39	5	43 x49	36¾ x43¾	35¼ x42¼	35	42	1¼		42	1⅞ x3¼	222	26117
42½	45	5	49¾ x54	45½ x49½	44 x48	43½	47¾	1¼		120	2 x3½	736	26119

2c curb ROADWAY • with or without back plate

type 683





dimension V generally 2 in. greater than adjacent curb depth—but may be varied as required

curb inlet with circular base also available

guarantee: ten years

ordering: specify both type number (683), curb height, V, and code number (from table)

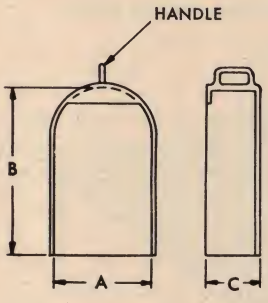
frame					grating			area grate opening sq. in.	code no.
E	F	A	B	D	C	C'	T		
without back plate									
30	30	36	36	5½	29¾	21¾	1¼	210	60280
36	27½	43½	35¾	6½	35	21¾	1¼	240	60281
48	29	54	37	6½	47¾	21¾	1¼	400	60282
49	36	55½	42¾	5	49½	29¾	1	630	60283
48	50	54	56	5	47¾	43½	1¼	800▲	60284
with back plate									
25½	27½	37	39½	6½	24	18¾	2½	145	60285
36	34¾	43	43	6½	35	21¾	1¼	240	60286
48	42	54	48	6½	47¾	21¾	1¼	400	60287

▲ grating in two parts

a standard type 1168

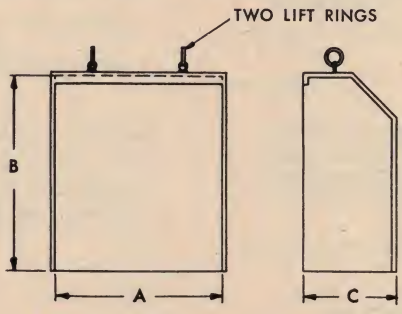
hood detail

for pipe sizes to 20 in.

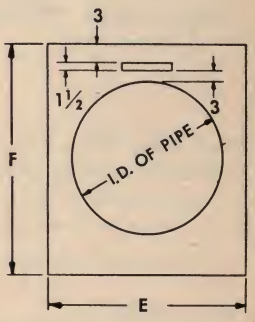


hood detail

for pipe sizes 22 in. and over



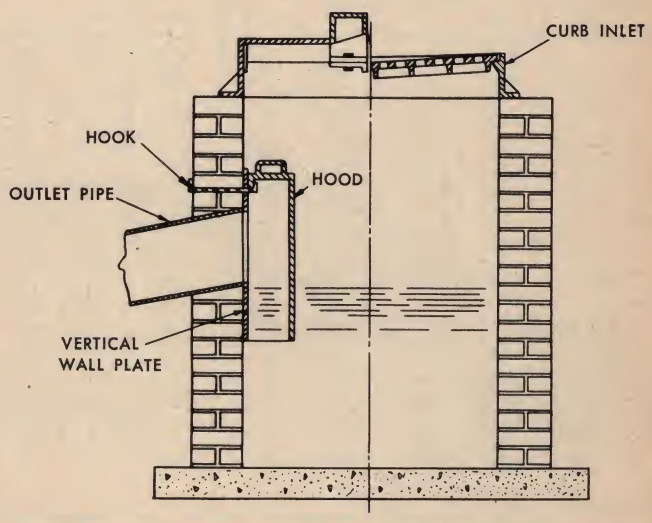
detail vertical wall plate



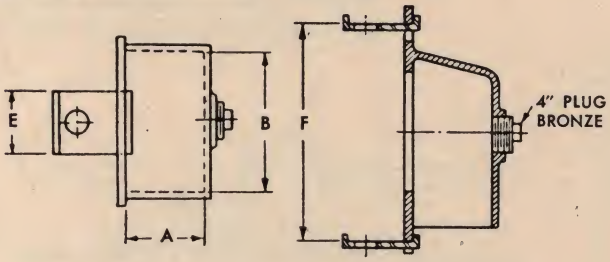
ordering: specify both type number (1168) and code number (from table)

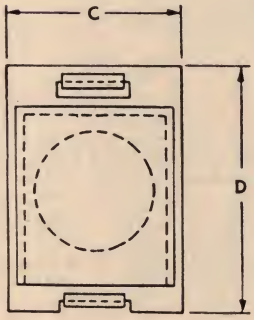
pipe size	hood A	hood B	hood C	vertical wall plate E	vertical wall plate F	vertical wall plate T	with vertical plate	without vertical plate
4	6	12	3	8	15	⅝	30133	30134
6	8½	15	4	10½	20	⅝	19706	19707
8	11½	20½	5½	13½	23½	⅝	26714	26721
10	13¼	23½	6½	15¼	26½	⅝	26715	26722
12	15¾	26	7½	17¾	29	⅝	26716	26723
15	18	27	9	20	30	¾	26717	26724
18	21¼	27¼	12¾	23½	32¼	⅞	19708	19709
20	25¼	29¼	14¾	27¼	32¼	⅞	26719	26726
22	26¾	31¼	15	29	36¾	⅞	19710	19711
24	30½	33¾	15	32¼	36¾	⅞	19697	21628
27	30½	36¼	19¾	33	42¼	1	19712	19713
30	35	39¼	21	37	42¼	1	19701	22998
33	40½	42¼	22	43	47¼	1	19714	19715
36	50	44¼	21⅛	52	47¼	1	19702	22999

installation of trap with curb inlet



b gas tight type 520





ordering: specify both type number (520) and code number (from table)

pipe size	A	B	C	D	E	F	code no.
4	3	6	10	20	6	16½	38100
6	4	9	13	22	6	18½	38101
8	5	12	16	24	8	20½	38102
10	6	14	18	26	8	22½	38103
12	8	16	20	28	8	24½	38104
15	10	18	22	31	8	27½	38105
18	12	24	29	34	10	30½	38106
21	12	30	35	37	10	33½	38107
24	15	32	37	40	12	36½	38108
27	15	40	45	43	12	39½	38109
30	15	48	54	46	12	42½	38110

FLOCKHART troughs, with grating (or cover), are particularly suited to public buildings, garages, laundries, manufacturing plants, parking areas—also to shower rooms in schools, dormitories, stadia and factories. They eliminate the necessity and expense of forms for building trenches. They assure uniform bearing of the grating (or cover) on the trough.

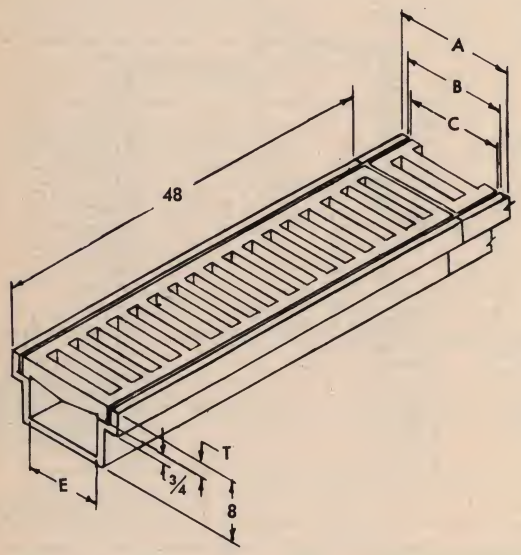
The sections, 48 in. long, are regularly furnished with open ends, butt joints and without pipe connections. However, these troughs can be furnished, when specified, with outlet pipe connections for extra heavy cast iron soil pipe.

For unusual requirements, these FLOCKHART troughs can be furnished with special features:

- special caulked joints between adjoining sections—for installations that must be watertight
- grating (or cover) secured to frame by silicon bronze bolts
- grating (or cover) of aluminum or bronze

ordering: give type number and code number (from table); also state over-all length of assembly and any special requirements; sections with closed ends; outlet connections by size, type (spigot, bell, inside caulk)

ROADWAY • with grating: type 646

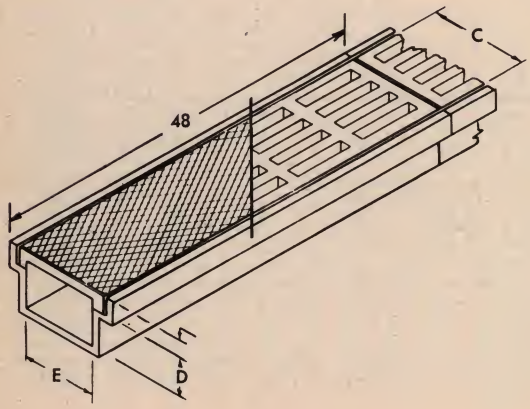


also available with cover and made watertight either by lead caulking or by bolting and gasketing

ordering: give type number (646) and code number (from table)

E	A	B	C	T	cast fitting surfaces type A	milled horizontal fitting surfaces type B	milled horizontal & vertical fitting surfaces type C
6	10½	8½	8¼	2	17300	17301	17302
8	12½	10½	10¼	2	17303	17304	17305
10	14½	12½	12¼	2	17306	17307	17308
12	16½	14½	14¼	2	17309	17310	17311
14	18½	16½	16¼	2½	17312	17313	17314
16	20½	18½	18¼	2½	17315	17316	17317
18	22½	20½	20¼	2½	17318	17319	17320
20	24½	22½	22¼	2½	16153	16154	16155
24	28½	26½	26¼	3	16159	16160	16161

WALKWAY • with cover or grating: type 689



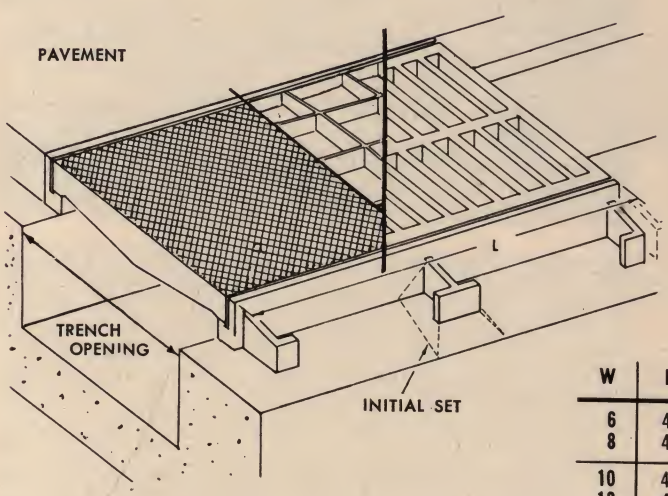
can be made watertight either by lead caulking or by bolting and gasketing

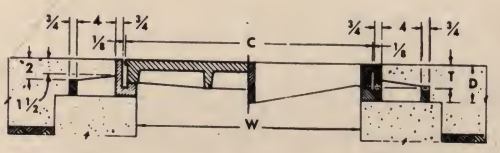
ordering: give type number (689) and code number (from table)

E	C	D = 4″		D = 6″	
		cover	grating	cover	grating
4	5¼	17900	17901	17902	17903
6	7¼	17904	17905	17906	17907
8	9¼	17908	17909	17910	17911
10	11¼	17912	17913	17914	17915
12	13¼	17916	17917	17918	17919

ROADWAY

with cover: type 672
with grating: type 679





covers and gratings for trench openings, W, wider than 12 in. made 24 in. long

variations: made of cast aluminum or bronze on order; frames bolted together with steel bolts when specified

guarantee: ROADWAY types for ten years

installation:

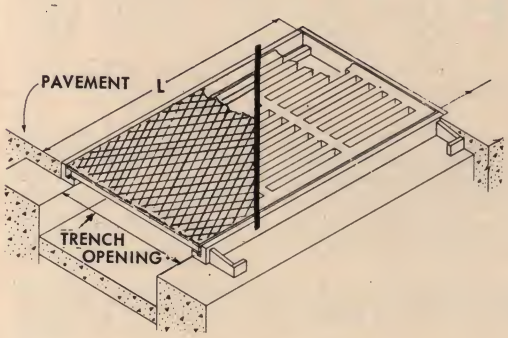
- set each frame and grating as a unit
- adjust unit to proper plane and cement anchors to base for initial set
- after cement hardens, test unit for plane
- pour concrete

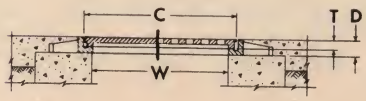
ordering: specify both type number and code number (from table)

					cast fitting surfaces type A		milled horizontal fitting surfaces type B		milled horizontal & vertical fitting surfaces type C	
W	L	C	T	D	672	679	672	679	672	679
6	48	8¼	2	3	45400	41100	45401	41101	45402	41102
8	48	10¼	2	3	45403	41103	45404	41104	45405	41105
10	48	12¼	2	3	45406	41106	45407	41107	45408	41108
12	48	14¼	2	3	45409	41109	45410	41110	45411	41111
14	48	16¼	2½	3½	45412	41112	45413	41113	45414	41114
16	48	18¼	2½	3½	45415	41115	45416	41116	45417	41117
18	48	20¼	2½	3½	45418	41118	45419	41119	45420	41120
20	48	22¼	2½	3½	45421	41121	45422	41122	45423	41123
22	48	24¼	2½	3½	45424	41124	45425	41125	45426	41126
24	48	26¼	3	4	45427	41127	45428	41128	45429	41129
30	48	32¼	3	4	45430	41130	45431	41131	45432	41132
36	48	38¼	3	4	45433	41133	45434	41134	45435	41135
42	48	44¼	3	4	45436	41136	45437	41137	45438	41138
48	48	50¼	3	4	45439	41139	45440	41140	45441	41141
54	48	56¼	4	5	45442	41142	45443	41143	45444	41144
60	48	62¼	4	5	45445	41145	45446	41146	45447	41147

WALKWAY

with cover: type 636
with grating: type 637





					cast fitting surfaces type A		milled horizontal fitting surfaces type B		milled horizontal & vertical fitting surfaces type C	
W	L	C	T	D	636	637	636	637	636	637
6	36	8¼	1¼	2	45200	45300	45201	45301	45202	45302
8	36	10¼	1¼	2	45203	45303	45204	45304	45205	45305
10	36	12¼	1¼	2	45206	45306	45207	45307	45208	45308
12	36	14¼	1¼	2	45209	45309	45210	45310	45211	45311
14	36	16¼	1¼	2	45212	45312	45213	45313	45214	45314
16	36	18¼	1¼	2	45215	45315	45216	45316	45217	45317
18	36	20¼	1¼	2	45218	45318	45219	45319	45220	45320
20	36	22¼	1½	2¼	45221	45321	45222	45322	45223	45323
22	36	24¼	1½	2¼	45224	45324	45225	45325	45226	45326
24	24	26¼	1½	2¼	45227	45327	45228	45328	45229	45329
27	24	29¼	1½	2¼	45230	45330	45231	45331	45232	45332
30	24	32¼	1¾	2½	45233	45333	45234	45334	45235	45335
33	24	35¼	1¾	2½	45236	45336	45237	45337	45238	45338
36	24	38¼	1¾	2½	45239	45339	45240	45340	45241	45341
39	24	41¼	1¾	2½	45242	45342	45243	45343	45244	45344
42	24	44¼	2	2¾	45245	45345	45246	45346	45247	45347
45	24	47¼	2	2¾	45248	45348	45249	45349	45250	45350
48	24	50¼	2	2¾	45251	45351	45252	45352	45253	45353
54	24	56¼	2	2¾	45254	45354	45255	45355	45256	45356
60	24	62¼	2	2¾	45257	45357	45258	45358	45259	45359

6 airport castings

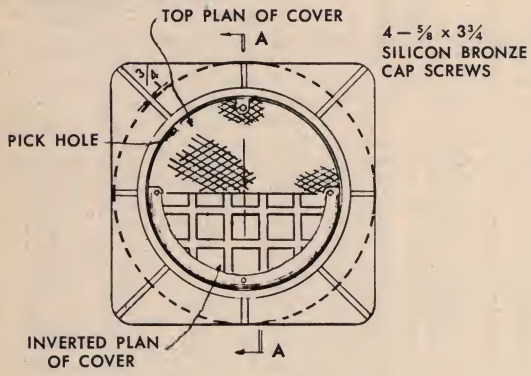
These Flockhart castings are specially designed and formulated to handle the heavy wheel loads of military, continental and intercontinental aircraft. They are used alongside runways, on aprons and in hangars.

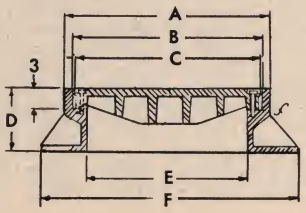
Their design loading conforms with the most recent CAA recommendations, used extensively by municipal and state agencies for their airports.

6a manhole frame with cover

● circular • for pit construction

type 686





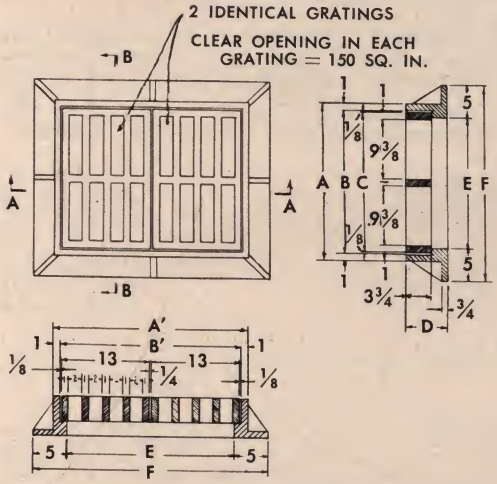
E	D	F	A	B	C	flange	code number
24	8	38	30	28	27¾	circular	18750
24	8	38	30	28	27¾	square	18751
30	8	44	36	34	33¾	circular	18740
30	8	44	36	34	33¾	square	18741

Made of cast iron ASTM A-48, class 30—for 150 psi uniformly distributed load. Seats of frame and cover machined for perfect bearing. Cover held down by four silicon bronze cap screws—to avoid displacement under wheel impact.

For special requirements, variations in cover are possible: other loadings; ductile iron ASTM A-339, for high loadings or reduced weight; inscription as required.

6b inlet frame with grating ■ rectangular • for pit construction

type 687



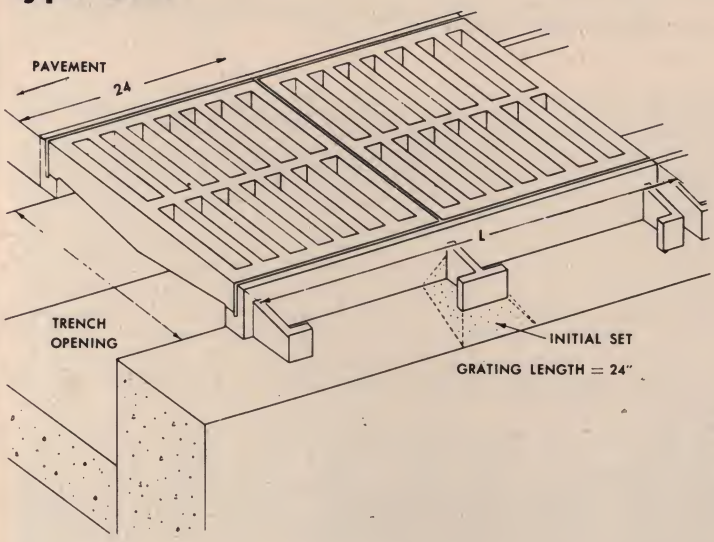
E x E'	D	F x F'	A x A'	B x B'	no. of gratings	free area	code no.
20 x 24½	6	30 x 34½	24 x 28½	22 x 26½	2	60%	34343
20 x 37½	6	30 x 47½	24 x 41½	22 x 39½	3	60%	34344
20 x 50¾	6	30 x 60¾	24 x 54¾	22 x 53¾	4	60%	34345

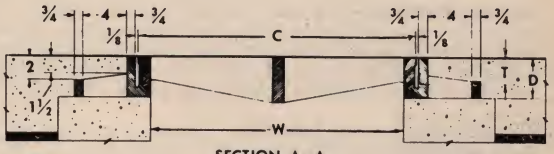
Frame made of cast iron ASTM A-48, class 30; grating made of ductile iron ASTM A-339—for 65,000 lb wheel load or 230 psi uniformly distributed load.

Frame designed with substantial flange for proper distribution of pressure to supporting structure. Grating designed with deep seating to prevent movement under wheel load; made in multiple sections to facilitate cleaning of catch basin.

6c trench frame with grating • for pit construction

type 688





Frame made of cast iron; grating made of either cast iron or ductile iron depending on load and span. Load ratings shown in table are for uniformly distributed loads and cover the majority of existing wheel loads. However, when trench width is 36 inches or more, it is necessary, in specifying or ordering, to specify actual wheel load, also the contact area or type of plane. Seats of frame and grating milled for perfect bearing.

Variations, when specified, are available: frame sections bolted together with steel bolts; grating bolted to frame (stainless steel or bronze, as specified).

installation:

- set each frame and grating as a unit
- adjust unit to proper plane and cement anchors to base for initial set
- after cement hardens, test unit for plane
- pour concrete

					loading in lb per sq in.			
W	L	C	T	D	110	143	200	243
6	48	8¼	2	3	47100	47101	47102	47103
8	48	10¼	2	3	47104	47105	47106	47107
10	48	12¼	2	3	47108	47109	47110	47111
12	48	14¼	2	3	47112	47113	47114	47115
14	48	16¼	2½	3½	47116	47117	47118	47119
16	48	18¼	2½	3½	47120	47121	47122	47123
18	48	20¼	2½	3½	47124	47125	47126	47127
20	48	22¼	2½	3½	47128	47129	47130	47131
22	48	24¼	2½	3½	47132	47133	47134	47135
24	48	26¼	3	4	47136	47137	47138	47139
30	48	32¼	3	4	47140	47141	47142	47143
36	48	38¼	3	4	47144	47145	47146	47147
42	48	44¼	3	4	47148	47149	47150	47151
48	48	50¼	3	4	47152	47153	47154	47155
54	48	56¼	4	5	47156	47157	47158	47159
60	48	60¼	4	5	47160	47161	47162	47163

7 armored concrete

ARMORED CONCRETE is concrete with the exposed vertical surfaces armored with grey cast iron. This armor is bonded to the concrete in such a manner that no part of it can vibrate in the slightest degree. Consequently there can be no fracture of the iron. Since cast iron is substantially incompressible, the force of an impact is so widely distributed that the concrete is undamaged. The resistance of the cast iron element to abrasion and corrosion is evident. The coefficients of expansion of cast iron and concrete are for all practical purposes identical: thus ARMORED CONCRETE is unaffected by variations of temperature.

advantages

- impact resistance: the only commercially known building material that resists impact perfectly
- abrasion resistance: all surfaces subject to abrasion are protected by the cast iron component
- corrosion resistance: the corrosion of cast iron is negligible
- temperature variation: no effect

testing

In 1924, initial installations of ARMORED CONCRETE were made at selected points in metropolitan New York. Locations were purposely selected which would subject the construction to the most severe impact and abrasion conditions. Not one failure has occurred. Since 1924, hundreds of ARMORED CONCRETE installations have been made in all parts of the country—many where other types of construction had failed. *In all instances,* ARMORED CONCRETE *has withstood the double test of time and performance.*

representative installations

United States Government
U. S. Military Academy, West Point

Port of New York Authority
Idlewild International Airport
Tri-Borough Bridge safety islands
Island Terminal No. 1
Holland Tunnel approaches
Lincoln Tunnel approaches

New York City Tunnel Authority
Queens Midtown Tunnel approaches

New York Central System
Grand Central Terminal

United Nations
Headquarters, New York City

New York City
Henry Hudson Parkway toll booth islands

Pennsylvania Railroad
Newark station

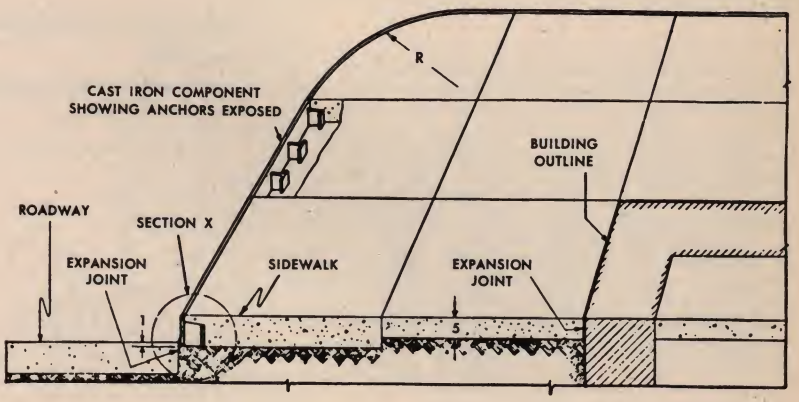
guarantee

Providing the method of installation is directed by us, any cast iron component which may crack within ten years from invoice date will be replaced gratis, fob nearest railroad station. In addition, a cash refund equal to the purchase price of the cast iron component will be made.

Two full miles of protection with ARMORED CONCRETE: *the helix approach to the Lincoln Tunnel.*

7a for sidewalk curb

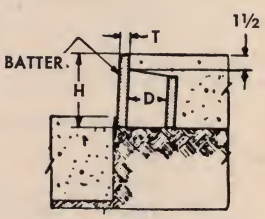
type 700



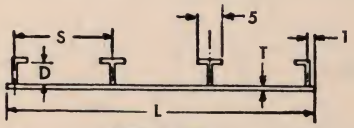
Batter, unless otherwise specified, 2°. Except for radial sections, any batter can be obtained by proper setting of casting. For radial sections, specify batter required.

dimensions

H	as required
L	6½ ft max
T	¾ to ⅞ in.
D	4 in.
S	18 in. max
R	as required



ENLARGED SECTION X



DETAIL OF
CAST IRON COMPONENT

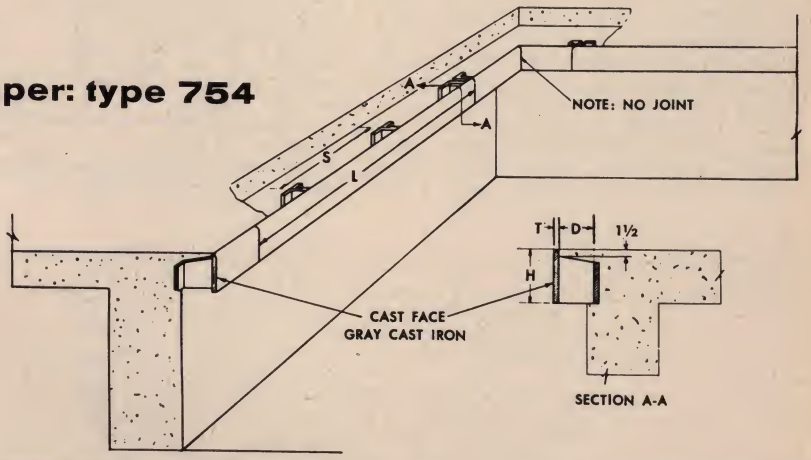
7b for loading platforms

without provision for wood bumper: type 754

guarantee: for 20 years, when installation is directed by Flockhart Foundry

dimensions

H	6, 8, 10, 12 in. or as specified
T	⅞ to 1 in.
S	20 in.
D	6 in. min
L	48 in. or as required



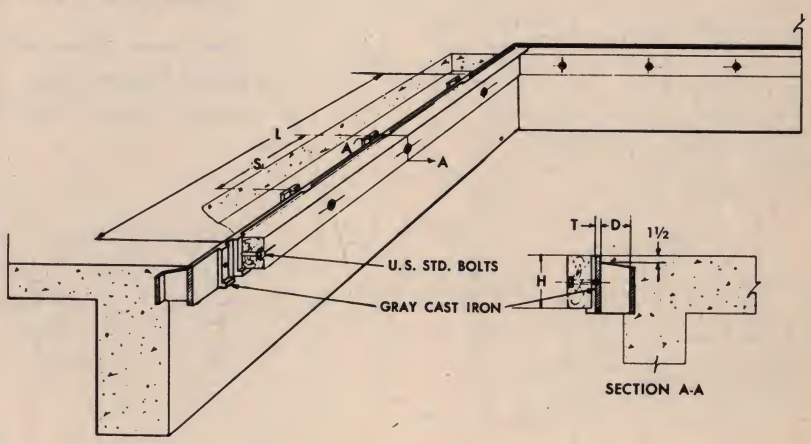
with provision for wood bumper: type 755

This type has the necessary fittings for attaching a renewable wooden bumper to prevent damage to vehicles. (Wood bumper not furnished).

guarantee: 20 years, when installation is directed by Flockhart Foundry

dimensions

H	6, 8, 10, 12 in. or as specified
T	⅞ to 1 in.
S	20 in. max
D	6 in. min
L	48 in. or as required



8a armored concrete type

FLOCKHART wheel guards of the armored concrete type are concrete with the exposed vertical surfaces armored with grey cast iron. This armor is bonded to the concrete in such a manner that no part of it can vibrate in the slightest degree. Consequently there can be no fracture of the iron. Since cast iron is substantially incompressible, the force of an impact is so widely distributed that the concrete is undamaged. The resistance of the cast iron element to abrasion and corrosion is evident. The coefficients of expansion of cast iron and concrete are for all practical purposes identical: thus, wheel guards of the armored concrete type are unaffected by variations of temperature.

guarantee: for 20 years, when installation is by Flockhart Foundry

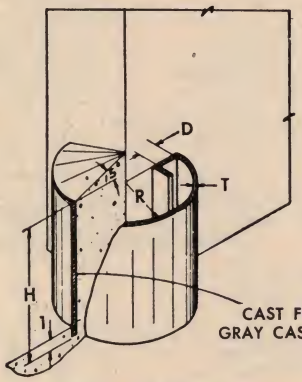
dimensions

H, R, L, X, Y, Z: as specified

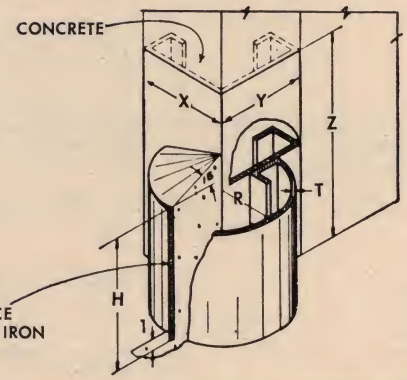
D	4 in.
T	⅞ to 1 in.
C	7 in. min
V	variable

for doorways

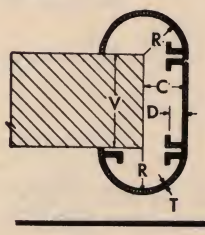
round without protection type 706-A



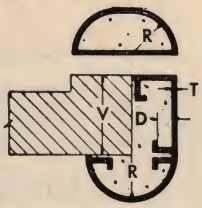
with column protection type 706-B



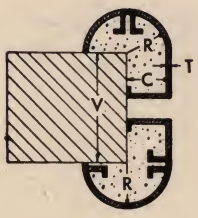
oval for wall type 707-A



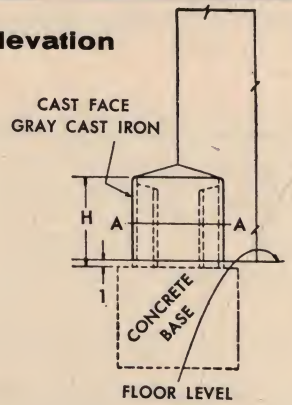
for sliding doors type 707-B



for elevating doors type 707-C

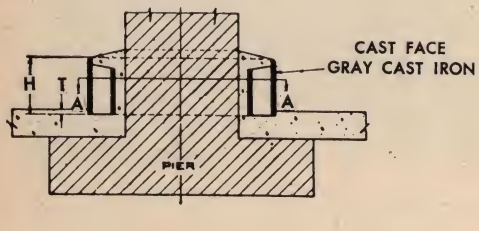


elevation



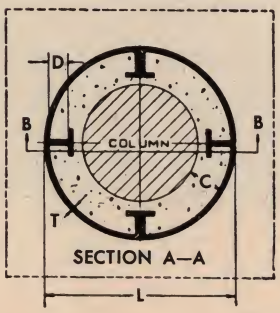
ELEVATION

Section AA for ARMORED CONCRETE wheel guards for columns shown at right

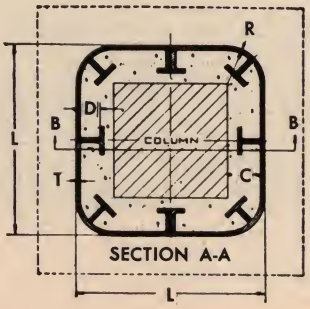


for columns

round type 710-A

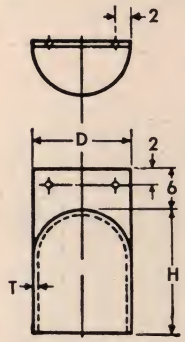


square type 710-B
rectangular type 710-C



b bolted type

180°: type 649

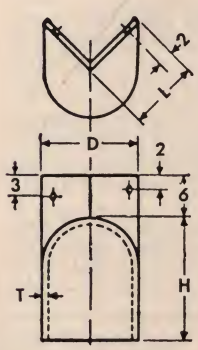


- made of finest quality close-grained grey iron
- bolt holes: ⅞ in. diam, cored
- grout hole: only when specified

guarantee: for 10 years
for other sizes, write for information

D	T	H-12	H-18	H-24	H-30	H-36	H-42	H-48
8	⅞	22800	22801	22802	22803	22804	22805	22806
10	⅞	22807	22808	22809	22810	22811	22812	22813
12	⅞	22814	22815	22816	22817	22818	22819	22820
14	⅞	22821	22822	22823	22824	22825	22826	22827
16	⅞	22828	22829	22830	22831	22832	22833	22834
18	1	22835	22836	22837	22838	22839	22840	22841
20	1	22842	22843	22844	22845	22846	22847	22848
22	1	22849	22850	22851	22852	22853	22854	22855
24	1	22856	22857	22858	22859	22860	22861	22862

90°: type 647



- made of finest quality close-grained grey iron
- bolt holes: ⅞ in. diam, cored
- grout hole: only when specified

guarantee: for 10 years

for other sizes, write for information

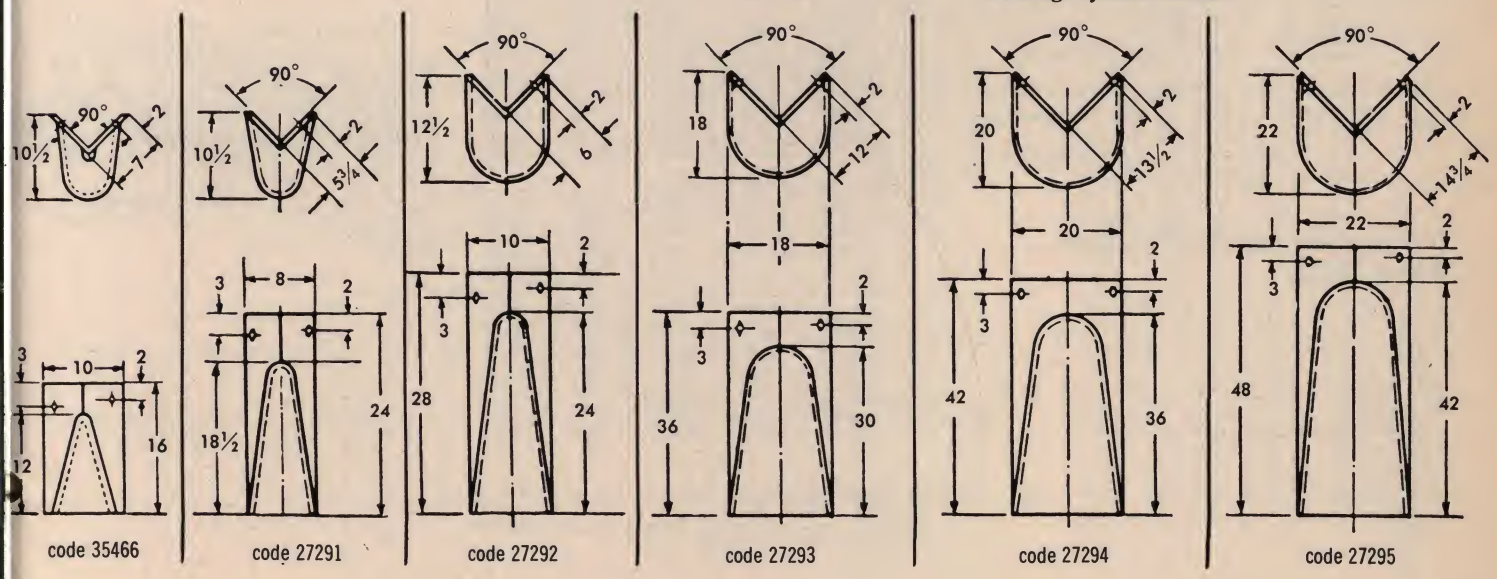
D	L	T	H-12	H-18	H-24	H-30	H-36	H-42	H-48
8	5⅝	⅞	22700	22701	22702	22703	22704	22705	22706
10	7 1/16	⅞	22707	22708	22709	22710	22711	22712	22713
12	8½	⅞	22714	22715	22716	22717	22718	22719	22720
14	9⅞	⅞	22721	22722	22723	22724	22725	22726	22727
16	11 5/16	⅞	22728	22729	22730	22731	22732	22733	22734
18	12 11/16	1	22735	22736	22737	22738	22739	22740	22741
20	14⅛	1	22742	22743	22744	22745	22746	22747	22748
22	15 9/16	1	22749	22750	22751	22752	22753	22754	22755
24	17	1	22756	22757	22758	22759	22760	22761	22762

90°: type 648

- made of finest quality close-grained grey iron
- thickness: ⅞ to 1 in.
- bolt holes: ⅞ in. diam, cored
- grout hole: only when specified

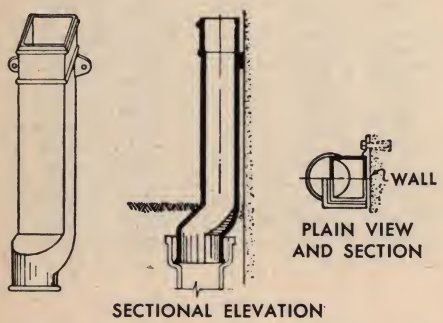
guarantee: for 10 years

ordering: by code number



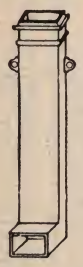
9a square, rectangular

for soil pipe connection type 209



for surface drain type 210

SQUARE OR RECTANGULAR



lengths 24-in. and longer furnished with one lug fastened to shoe 4 in. below top by ¼ csk machine screw; type 209 offset, on specification, for base

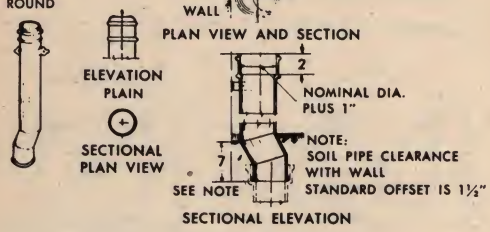
ordering: specify type number and code number (from table)

length in.	dimensions, in. 2 x 2	2 x 3	2 x 4	3 x 3	3 x 4	3 x 5	4 x 4	4 x 5	4 x 6	4 x 8	5 x 5	5 x 8	6 x 6	6 x 8
type 209														
12	34000	34008	39800	34016	34025	22240	34033	34041	37700	37710	34850	37720	37730	39500
18	34001	34009	39801	34017	34026	22241	34034	34042	37701	37711	34851	37721	37731	39501
24	34002	34010	39802	34018	34027	22242	34035	34043	37702	37712	34852	37722	37732	39502
30	34003	34011	39803	34019	34028	22243	34036	34044	37703	37713	34853	37723	37733	39503
36	34004	34012	39804	34021	34029	22244	34037	34045	37704	37714	34854	37724	37734	39504
42	34005	34013	39805	34022	34030	22245	34038	34046	37705	37715	34855	37725	37735	39505
48	34006	34014	39806	34023	34031	22246	34039	34047	37706	37716	34856	37726	37736	39506
54	34007	34015	39807	34024	34032	22247	34040	34048	37707	37717	34857	37727	37737	39507
60	34500	34502	39808	34504	34506	22248	34508	34510	37708	37718	34858	37728	37738	39508
66	22380	22381	39809	22382	22383	22249	22384	22385	22386	22387	34859	22388	22389	22390
72	34501	34503	39810	34505	34507	22250	34509	34511	37709	37719	34860	37729	37739	39509
84	39400	39401	39811	34402	39403	22251	39404	39405	39406	39407	34861	39408	39409	39510
type 210														
12	14800	14812	14824	14836	14848	14860	14872	14884	14896	14908	14920	14932	14944	14956
18	14801	14813	14825	14837	14849	14861	14873	14885	14897	14909	14921	14933	14945	14957
24	14802	14814	14826	14838	14850	14862	14874	14886	14898	14910	14922	14934	14946	14958
30	14803	14815	14827	14839	14851	14863	14875	14887	14899	14911	14923	14935	14947	14959
36	14804	14816	14828	14840	14852	14864	14876	14888	14900	14912	14924	14936	14948	14960
42	14805	14817	14929	14841	14853	14865	14877	14889	14901	14913	14925	14937	14949	14961
48	14806	14818	14830	14842	14854	14866	14878	14890	14902	14914	14926	14938	14950	14962
54	14807	14819	14831	14843	14855	14867	14879	14891	14903	14915	14927	14939	14951	14963
60	14808	14820	14832	14844	14856	14868	14880	14892	14904	14916	14928	14940	14952	14964
66	14809	14821	14833	14845	14857	14869	14881	14893	14905	14917	14929	14941	14953	14965
72	14810	14822	14834	14846	14858	14870	14882	14894	14906	14918	14930	14942	14954	14966
84	14811	14823	14835	14847	14859	14871	14883	14895	14907	14919	14931	14943	14955	14967

9b circular

for soil pipe connection type 212

ROUND



for surface drainage type 213

ROUND

length in.	diameter, in. 3	4	5	6	8
type 212					
12	34300	34308	34316	34324	20100
18	34301	34309	34317	34325	20101
24	34302	34310	34318	34326	20102
30	34303	34311	34319	34327	20103
36	34304	34312	34320	34328	20104
42	34305	34313	34321	34329	20105
48	34306	34314	34322	34330	20106
54	34307	34315	34323	34331	20107
60	34332	34334	34336	34338	20108
72	34333	34335	34337	34339	20109
type 213					
12	34400	34410	34420	34430	20110
18	34401	34411	34421	34431	20111
24	34402	34412	34422	34432	20112
30	34403	34413	34423	34433	20113
36	34404	34414	34424	34434	20114
42	34405	34415	34425	34435	20115
48	34406	34416	34426	34436	20116
54	34407	34417	34427	34437	20117
60	34408	34418	34428	34438	20118
72	34409	34419	34429	34439	20119

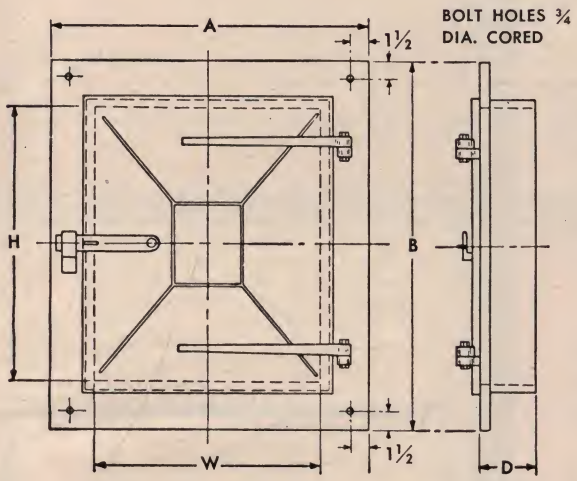
All lugs fastened to shoe by ¼ csk machine screw—4 inches below top.
No lugs furnished on 12" and 18" length. One lug on larger sizes.
Any pattern offset on specification for base.

lengths 24-in. and longer with one lug 4 in. below top, fastened to shoe by ¼ csk machine screw; type 212 offset, on specification, for base

ordering: specify type number and code number (from table)

10a clean-out frame with door

type 633



W	H	A	B	dimension D, in. 4	6	8	10	12
4	6	10¾	12¾	63000	63001	63002	63003	63004
6	8	12¾	14¾	63005	63006	63007	63008	63009
8	10	14¾	16¾	63010	63011	63012	63013	63014
10	10	16¾	16¾	63015	63016	63017	63018	63019
	12	16¾	18¾	63020	63021	63022	63023	63024
12	8	18¾	14¾	63025	63026	63027	63028	63029
	10	18¾	16¾	63030	63031	63032	63033	63034
	12	18¾	18¾	63035	63036	63037	63038	63039
	16	18¾	22¾	63040	63041	63042	63043	63044
	18	18¾	24¾	63045	63046	63047	63048	63049
15	9	21¾	15¾	63050	63051	63052	63053	63054
16	16	22¾	22¾	63055	63056	63057	63058	63059
	10	22¾	16¾	63060	63061	63062	63063	63064
	20	22¾	26¾	63065	63066	63067	63068	63069
	24	22¾	30¾	63070	63071	63072	63073	63074
18	18	24¾	24¾	63075	63076	63077	63078	63079
	24	24¾	30¾	63080	63081	63082	63083	63084
	30	24¾	36¾	63085	63086	63087	63088	63089
20	16	26¾	22¾	63090	63091	63092	63093	63094
	20	26¾	26¾	63095	63096	63097	63098	63099
	30	26¾	36¾	63100	63101	63102	63103	63104
24	18	30¾	24¾	63105	63106	63107	63108	63109
	24	31	31	63110	63111	63112	63113	63114
	30	31	37	63115	63116	63117	63118	63119
	36	31	43	63120	63121	63122	63123	63124
	42	31	49	63125	63126	63127	63128	63129
	48	31	55	63130	63131	63132	63133	63134
30	24	37	31	63135	63136	63137	63138	63139
	30	37	37	63140	63141	63142	63143	63144
	36	37	43	63145	63146	63147	63148	63149
	48	37	55	63150	63151	63152	63153	63154
36	36	43	43	63155	63156	63157	63158	63159
	48	43	55	63160	63161	63162	63163	63164
	72	43	79	63165	63166	63167	63168	63169
42	48	49	55	63170	63171	63172	63173	63174

variations: milled bearing surfaces on frame and door; padlock provision; baffle plates; arched top; provision for fire brick; gas tight service

ordering: specify type number (633) and code number (from table)

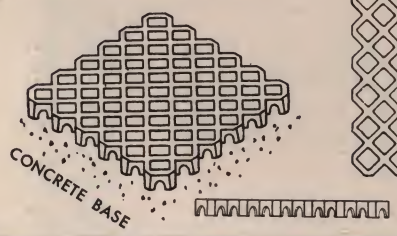
10b grid

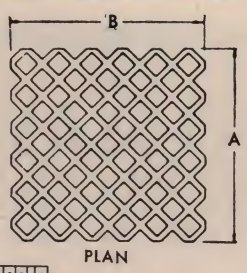
cast iron • for concrete floors

type 493

to provide a surface resistant to traction, impact, abrasion and corrosion

ordering: give type number (493) and code number (from table)





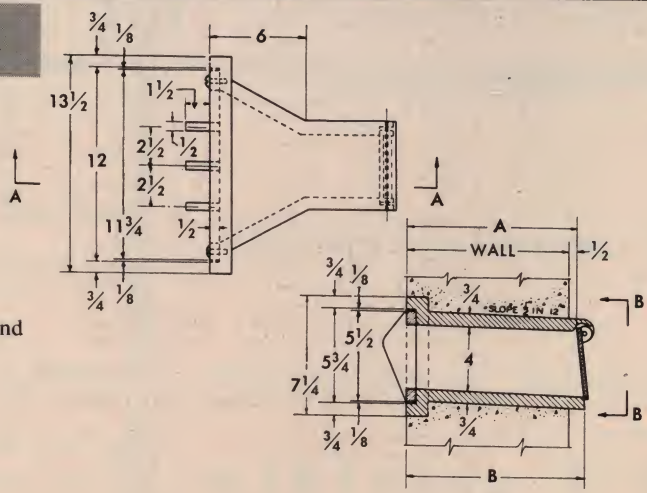
A	B	code no.
thickness, T: ¾ in.		
12	12	38495-G
	24	37428-G
thickness, T: 1⅛ in.		
12	6	17526-G
	12	17524-G
	24	17525-G

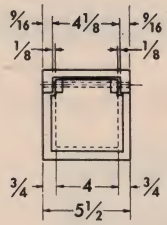
10c wall scuppers

type 658

dimension B may be varied

ordering: give type number (658) and code number (from table)





wall size	A	B	code no.
6	6½	7	22150
8	8½	9	22151
10	10½	11	22152
12	12½	13	22153

casting materials

For the construction and allied industries, FLOCKHART FOUNDRY COMPANY manufactures a great variety of castings in the materials described below. Unless otherwise noted, these castings are made in the finest quality grey cast iron.

cast iron: Conforms to ASTM specification A-48 (latest revision), class 30. Develops a minimum ultimate tensile strength of 30,000 psi. Because of its mechanical and physical properties and its low cost, cast iron, properly designed, is a highly desirable construction metal.

ductile (modular) iron: Conforms to ASTM specification A-339 (latest revision) in two grades: alloy 60–45–10 which develops minimum tensile strength of 60,000 psi, minimum yield strength of 45,000 psi, minimum elongation of 10%; and alloy 80–60–03 which develops minimum tensile strength of 80,000 psi, minimum yield strength of 60,000 psi, minimum elongation of 3%. This newly developed metal combines the superior qualities of cast iron with the strength of cast steel. Because of its relatively low cost, it is admirably suited for construction castings. Additional information on request.

aluminum: Conforms to ASTM specification B-26 (latest revision) in two grades, depending on strength and weight required: alloy S 5A-F and alloy SG 70A-T6. Both alloys have been selected for their particular resistance to atmospheric corrosion.

cast steel: Conforms to ASTM specification A-27 (latest revision) in two grades: alloy 60–30 and alloy 65–35.

cast bronze: to specification

NOTE: *All* FLOCKHART *castings are furnished* non-*painted. Long years of experience have shown that painting does not protect cast iron; it merely conceals any defects that might appear in the casting.*

engineering service

With every FLOCKHART product goes 80 full years of sound, practical experience —experience in construction castings, armored concrete, wheel guards and related castings. All this experience is available to architects, highway engineers, municipal officials—through the FLOCKHART engineering staff.

For assistance in applying the products in this catalog or the designing of special products—address our Department of Research and Development.

other castings

for sewers, waterworks: air vents for water mains, lift valves, pressure relief valves, slide valves, shear gate valves, wall sleeves, sludge shoes, stop plank grooves

for bridges: scuppers, railing posts, rockers for fixed and expansion bearings . . . *write for complete drawing file*

for docks: bollards, bitts, cleats, chocks—made in cast iron, ductile iron, cast steel; capstan frames and covers, mooring eyes . . . *write for dock castings catalog, no. 143*

also: adaptor rings, port bases, airport mooring eyes, chimney caps, heavy-duty platform guards

FLOCKHART FOUNDRY COMPANY

ARMORED CONCRETE DIVISION

CONSTRUCTION CASTINGS DIVISION

founded 1879

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